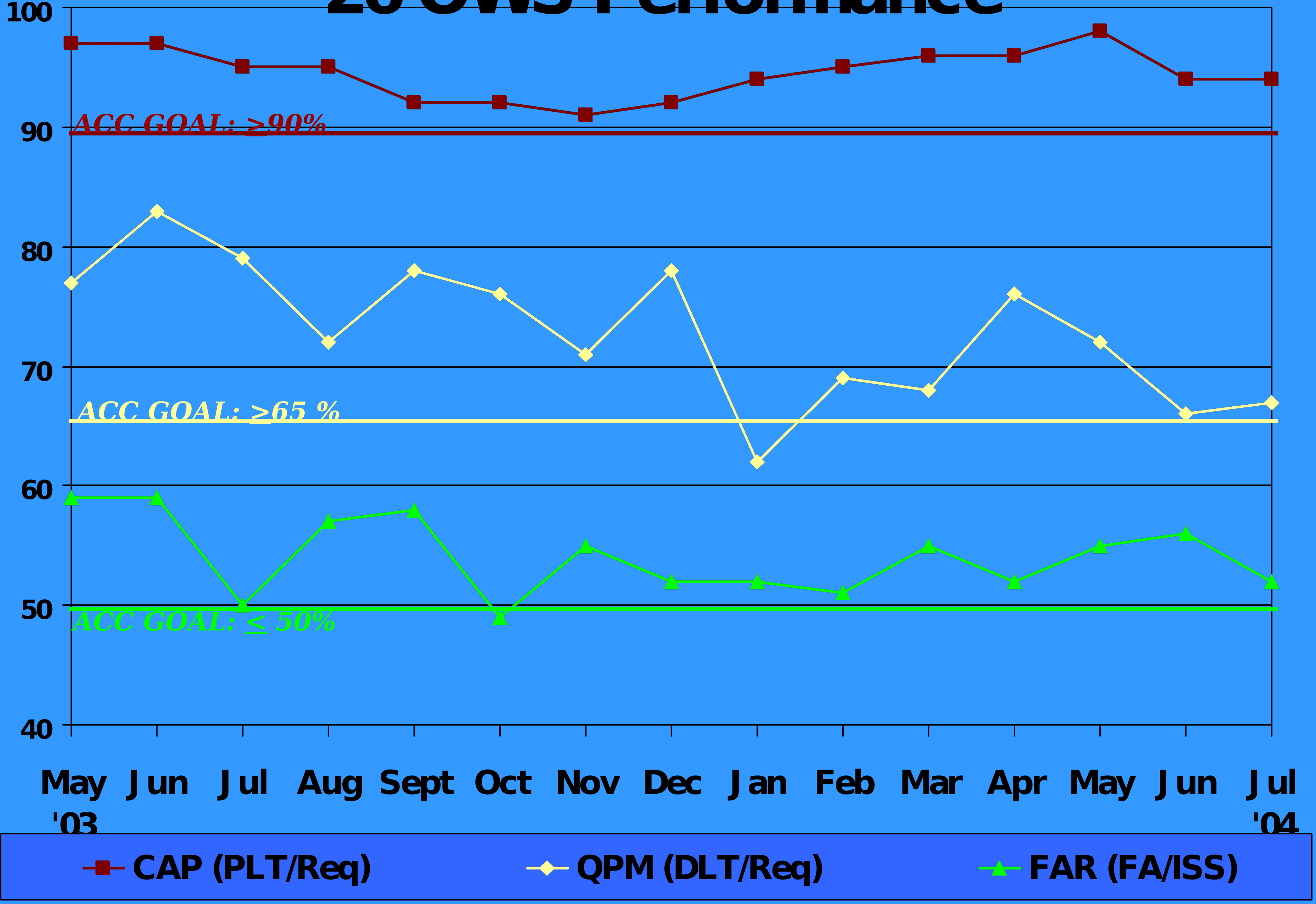
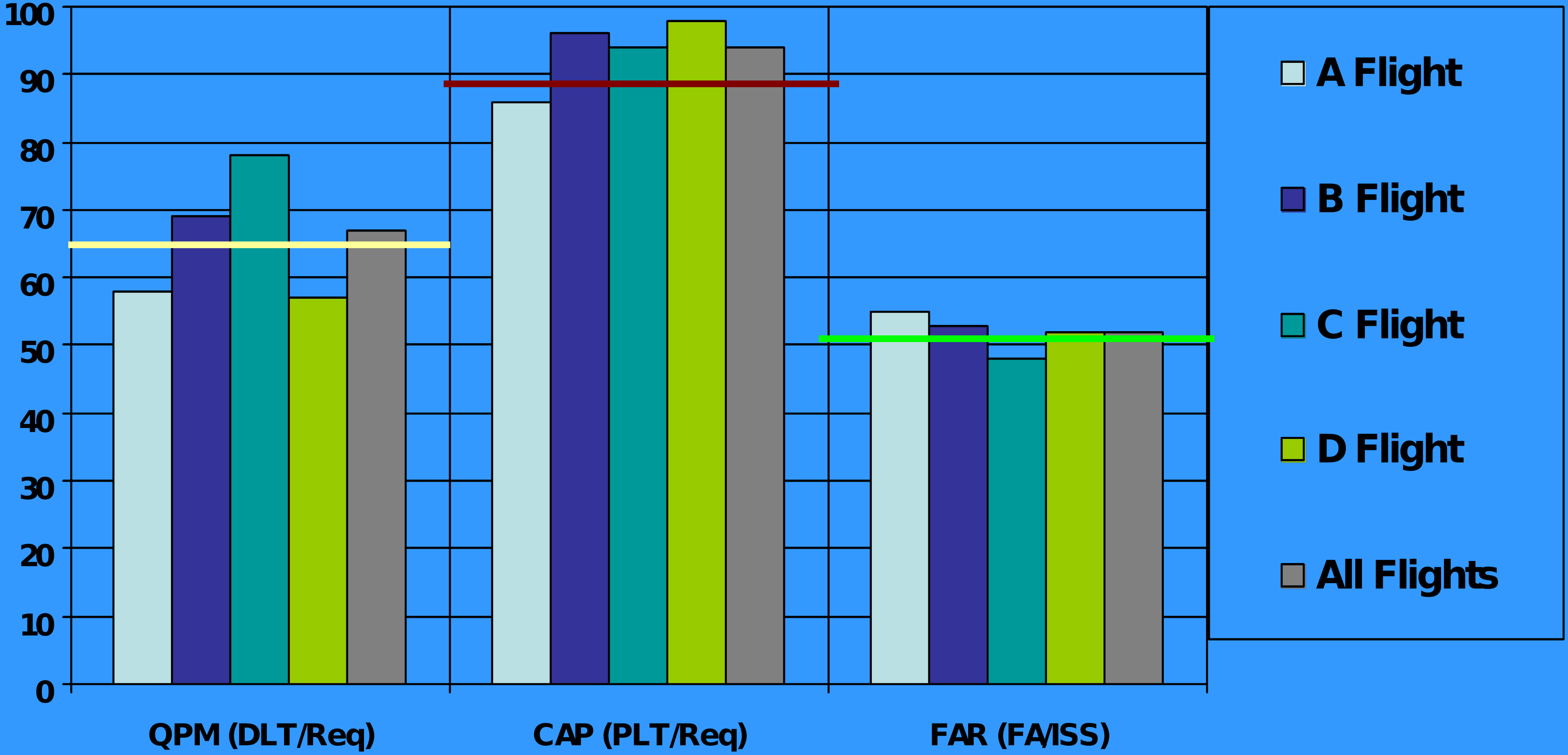
July 2004 Metrics Brief

26 OWS Performance



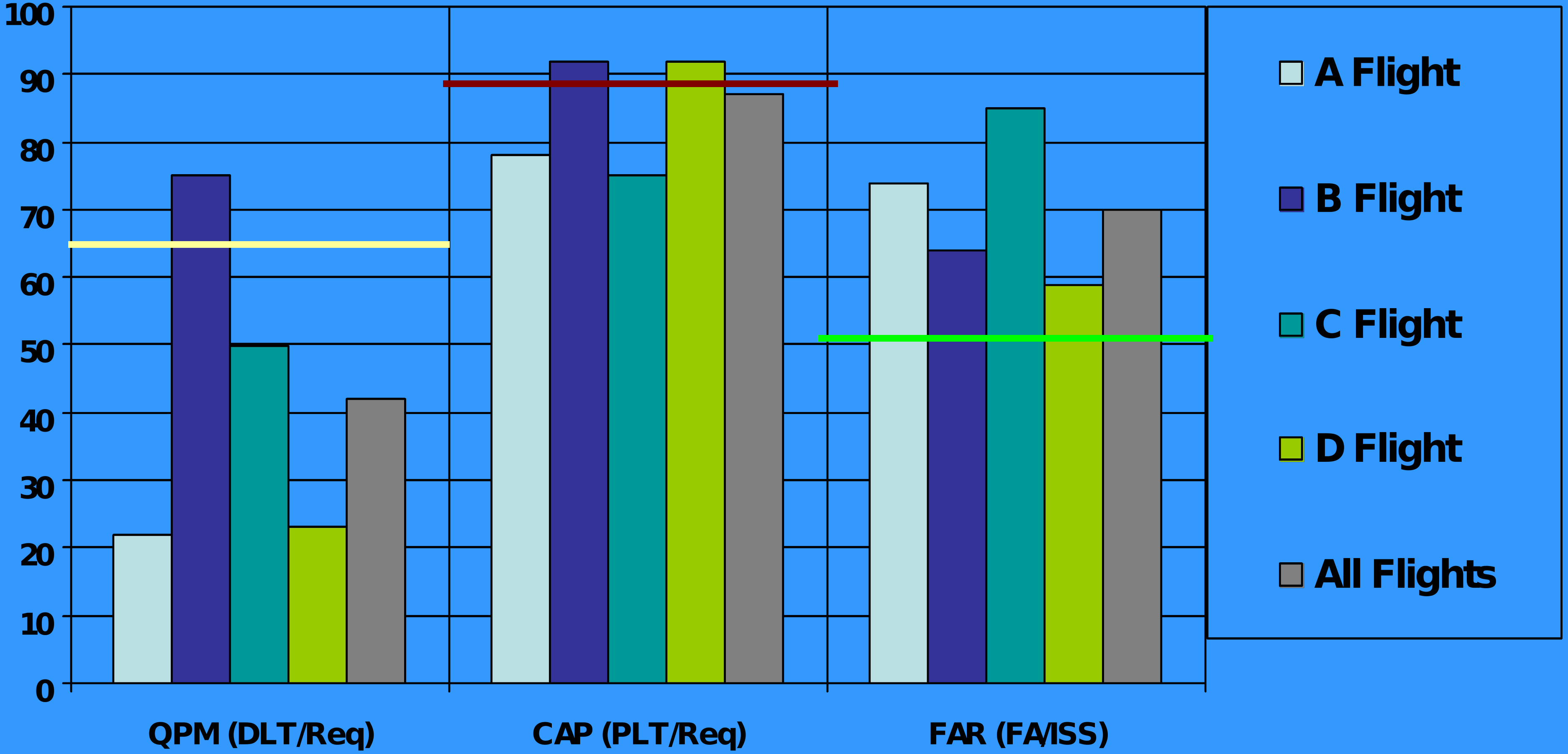
July 2004



ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

	Issued	Required	DLT	PLT	FA	ATF
July ‘04	369	177	118	166	192	11

July 2004 W/O LTG

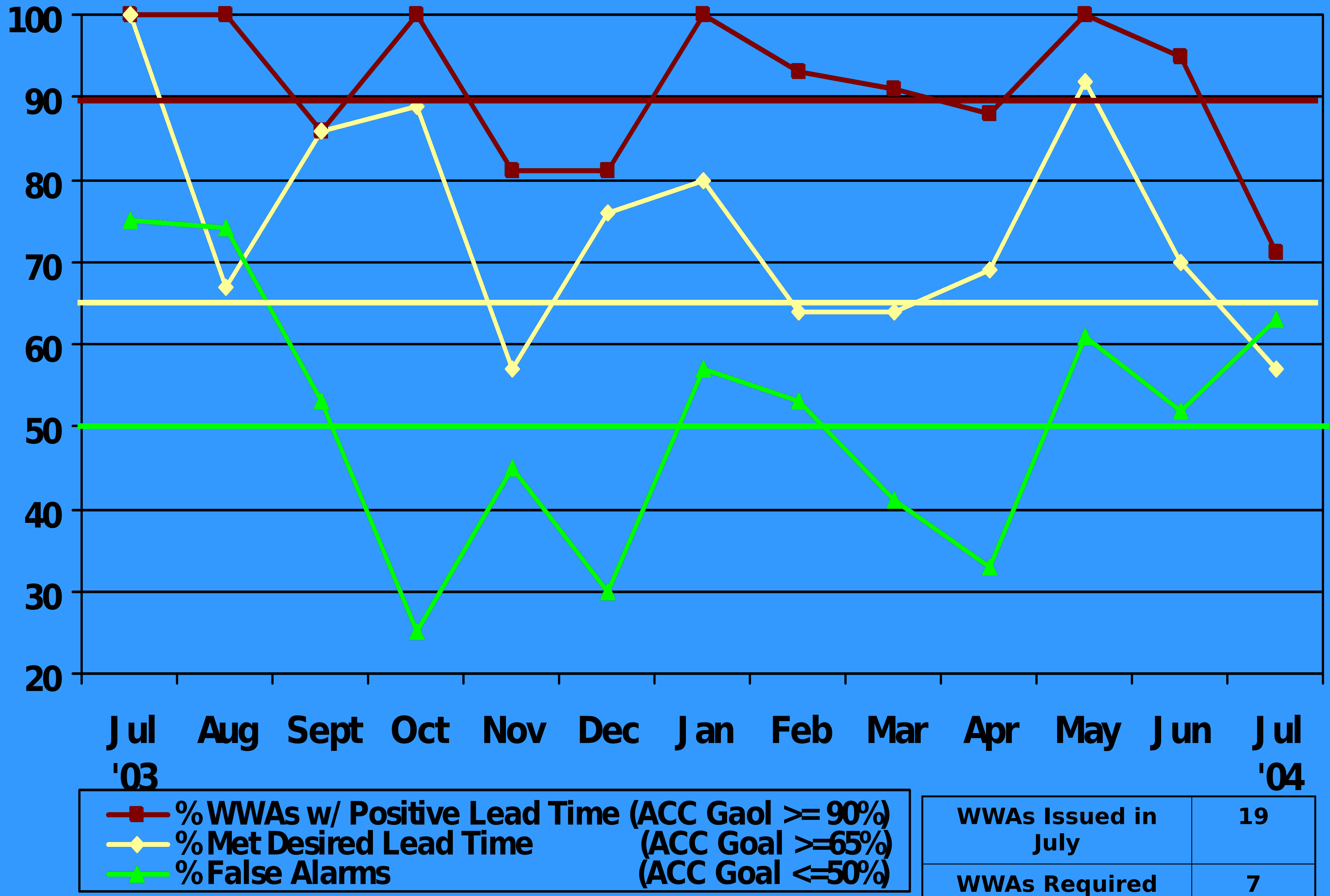


ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

	Issued	Required	DLT	PLT	FA	ATF
July ‘04	127	38	16	33	89	5

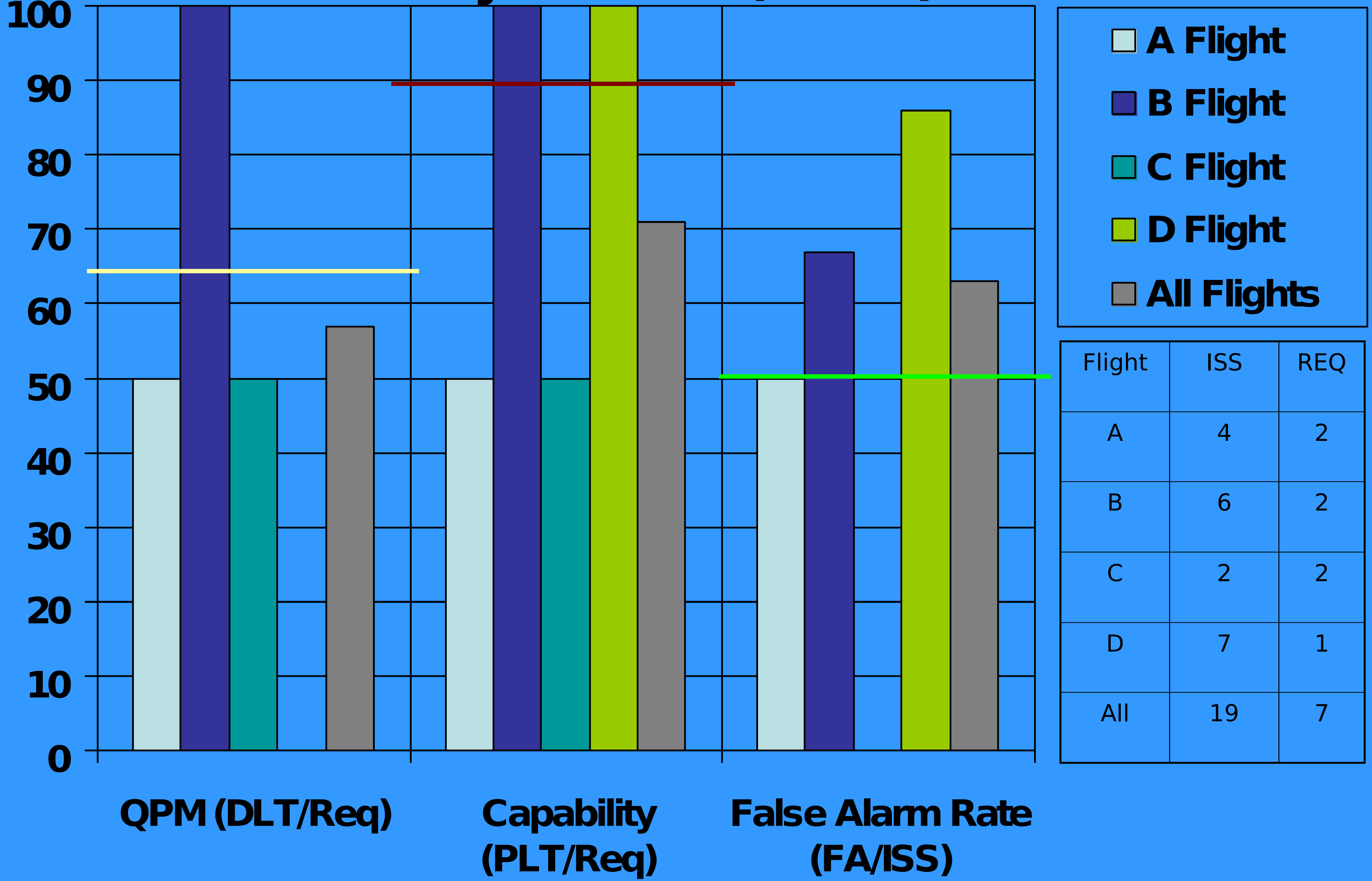
ZONE 1

Dyess AFB Watch, Warning, and Advisory (WWA) Trend



WWAs Issued in July	**19**
WWAs Required	**7**

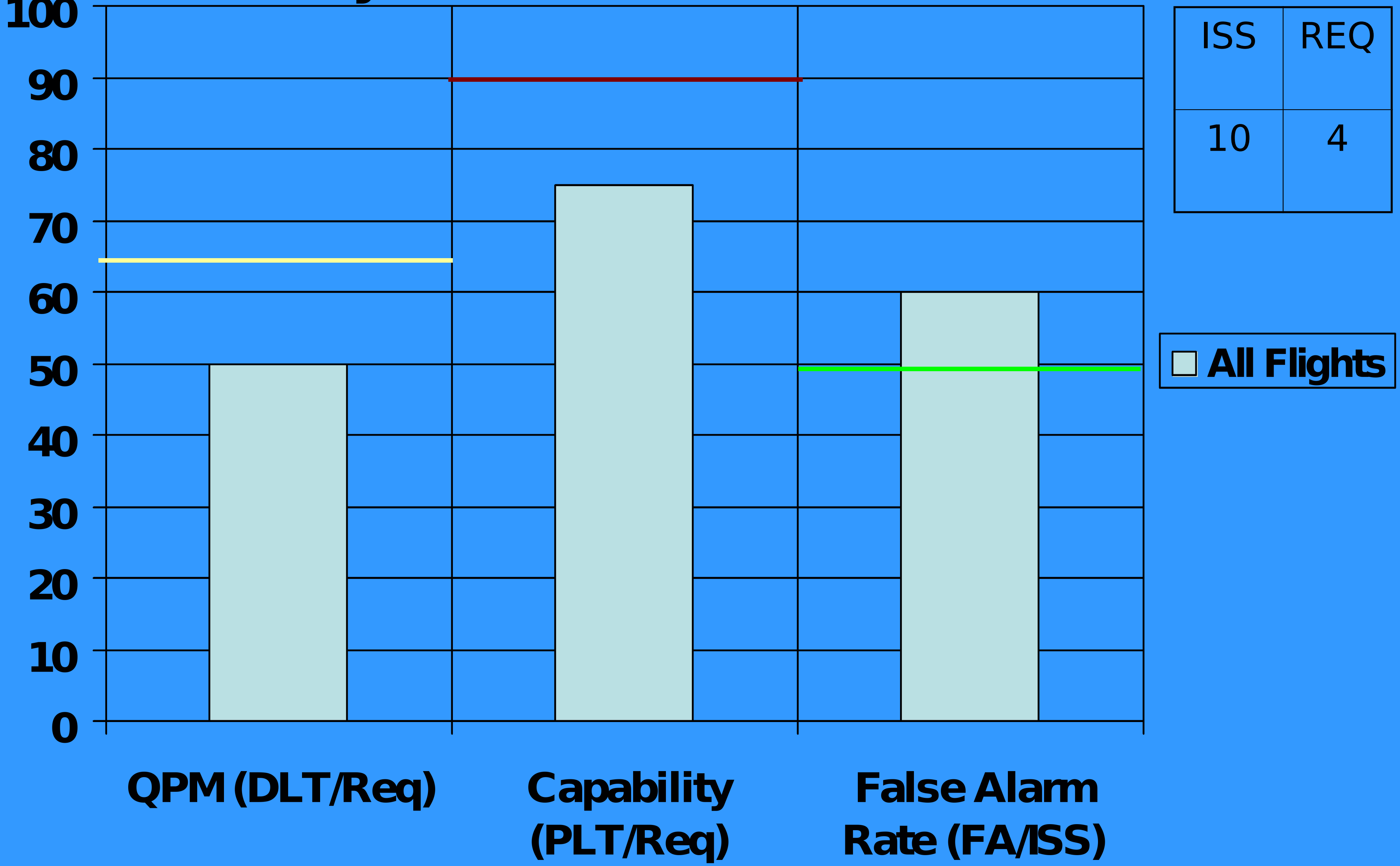
Dyess AFB (KDYS)



Flight	ISS	REQ
A	4	2
B	6	2
C	2	2
D	7	1
All	19	7

ACC GOAL: ≥ 65% ***ACC GOAL: ≥ 90%*** ***ACC GOAL: ≤ 50%***

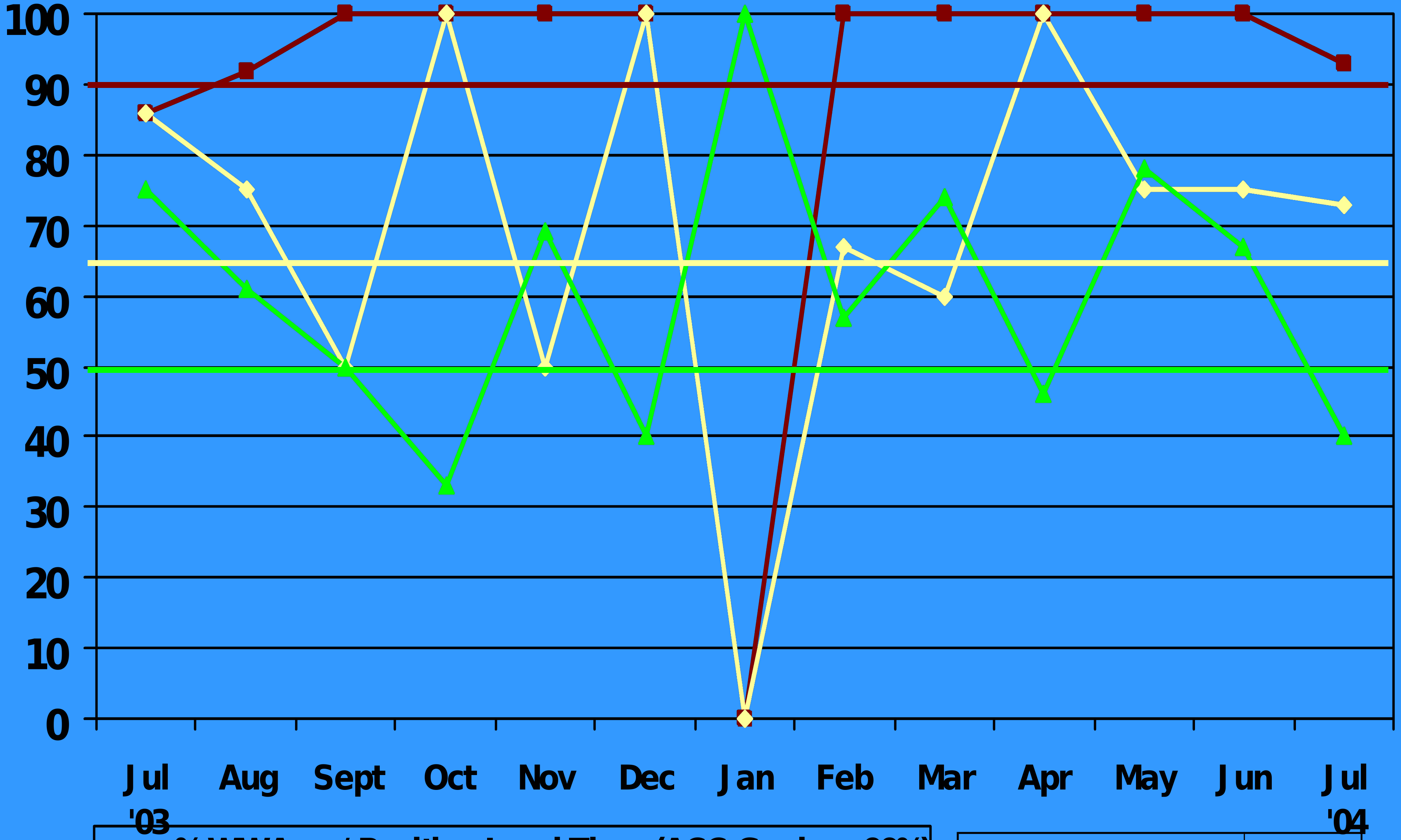
Dyess AFB (KDYS) W/O LTG



ISS	REQ
10	4

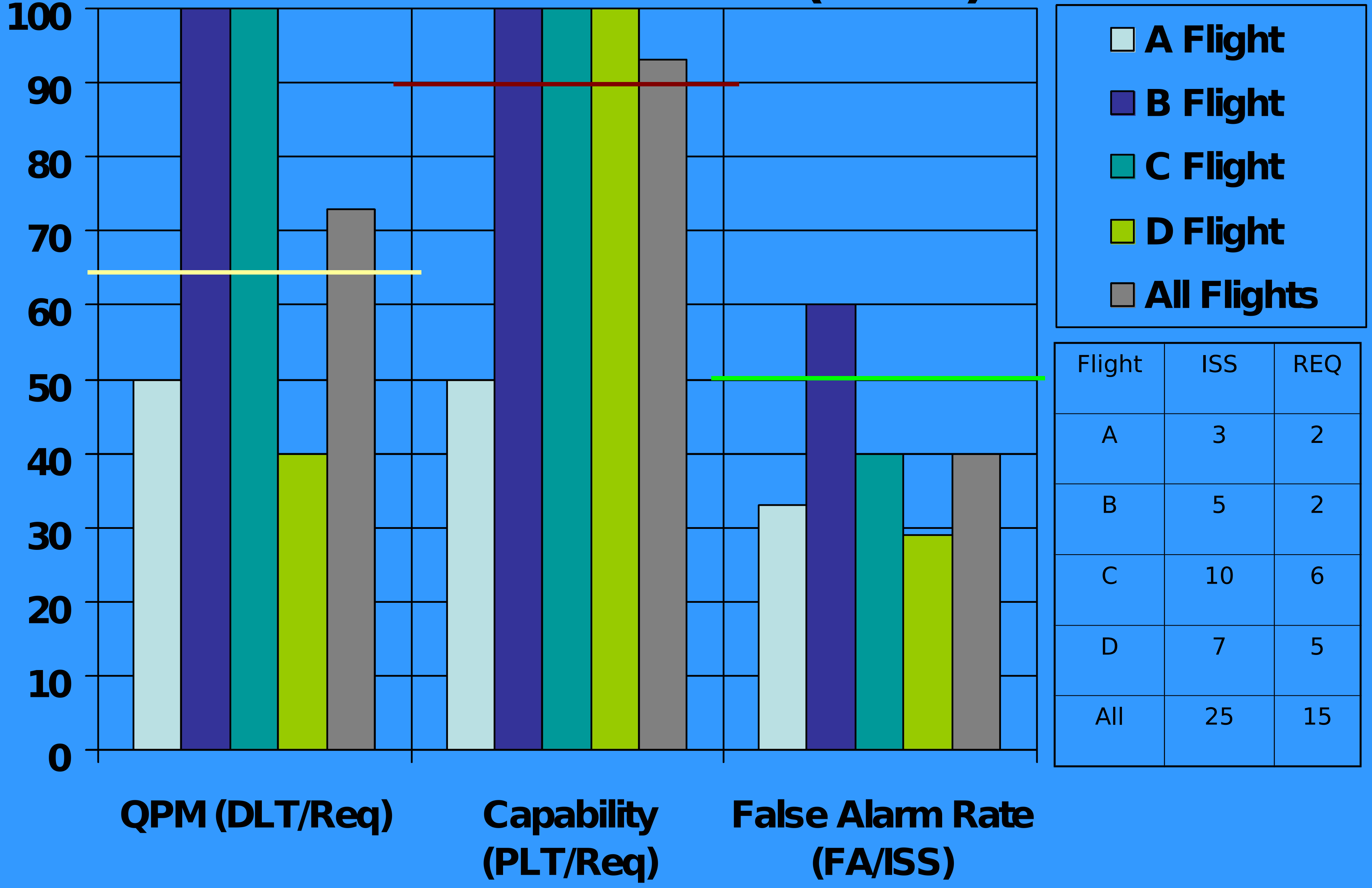
ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

Little Rock AFB Watch, Warning, and Advisory (WWA) Trend



WWAs Issued in July	25
WWAs Required	15

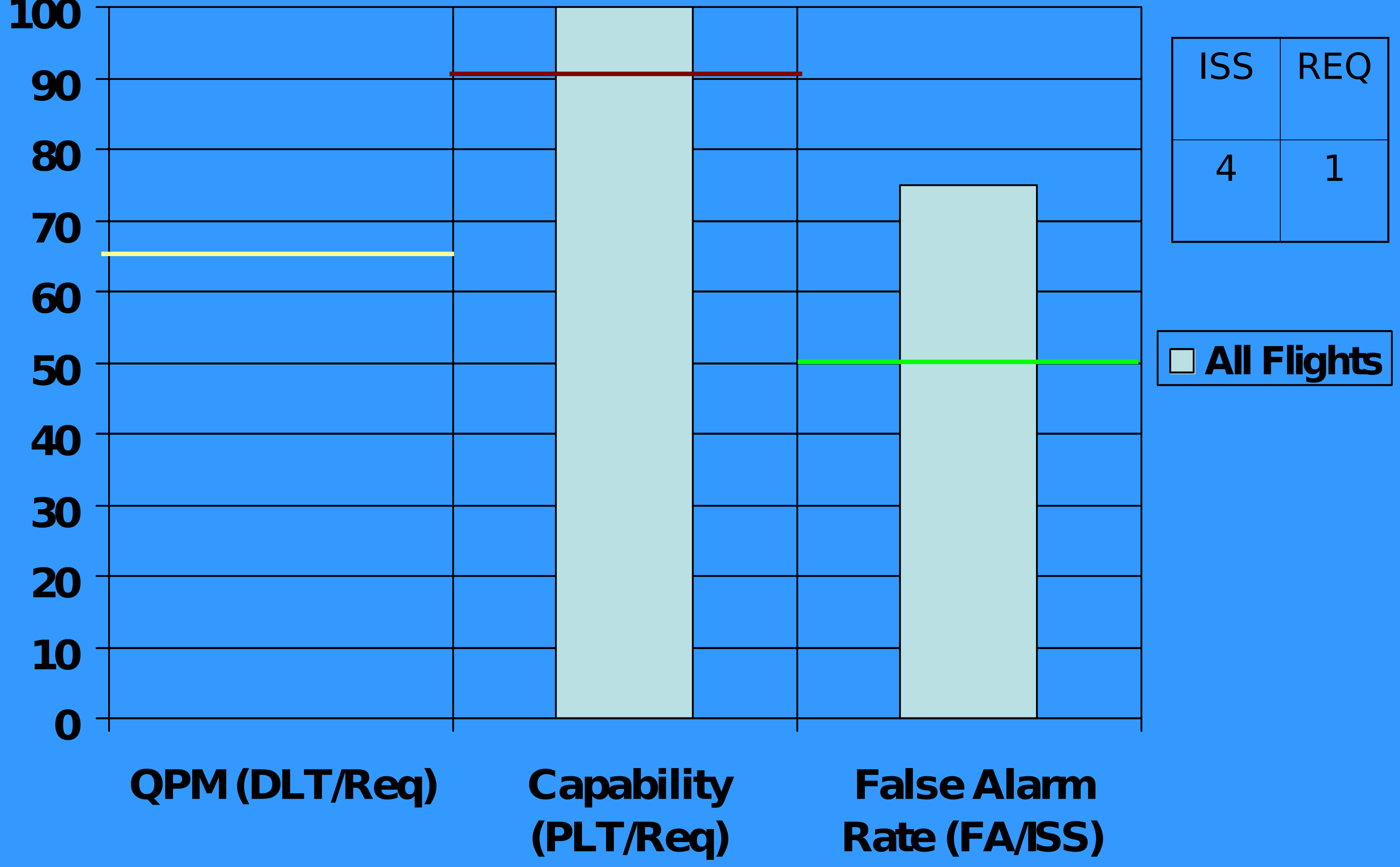
Little Rock AFB (KLRF)



Flight	ISS	REQ
A	3	2
B	5	2
C	10	6
D	7	5
All	25	15

ACC GOAL: ≥ 65% ***ACC GOAL: ≥ 90%*** ***ACC GOAL: ≤ 50%***

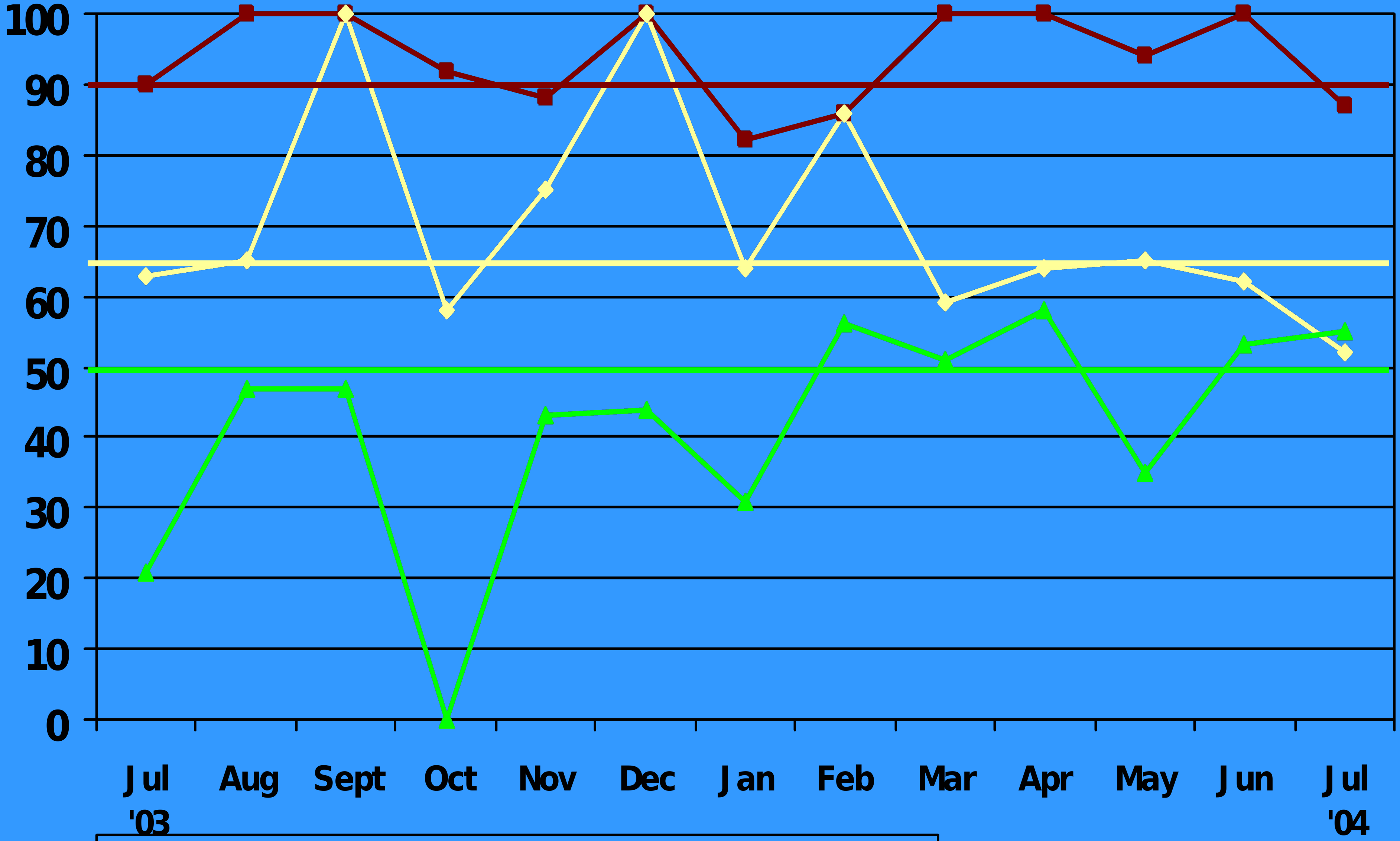
Little Rock AFB (KLRF) W/O LTG



ISS	REQ
4	1

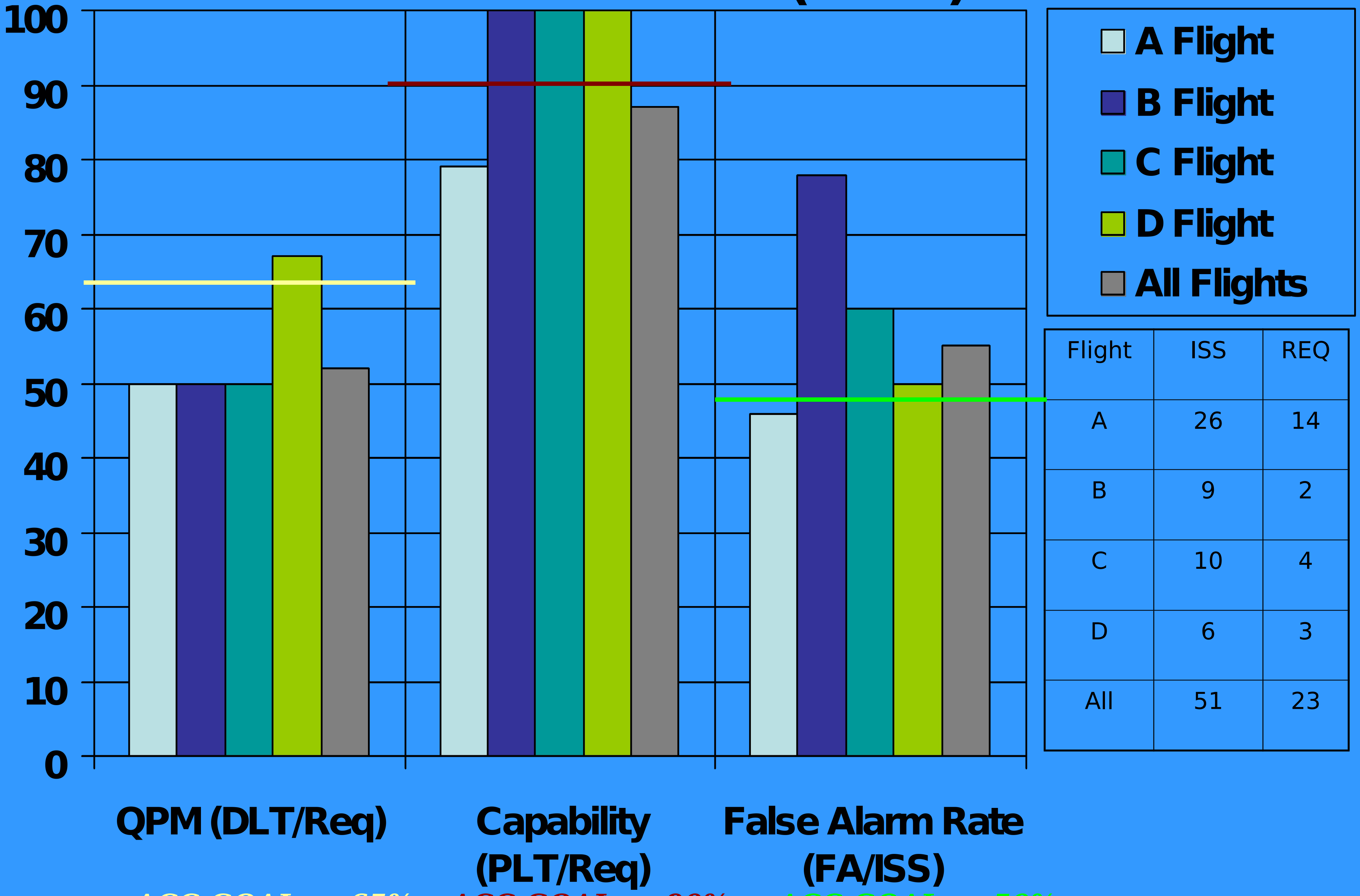
ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

Whiteman AFB Watch, Warning, and Advisory (WWA) Trend



WWAs Issued in July	**51**
WWAs Required	**23**

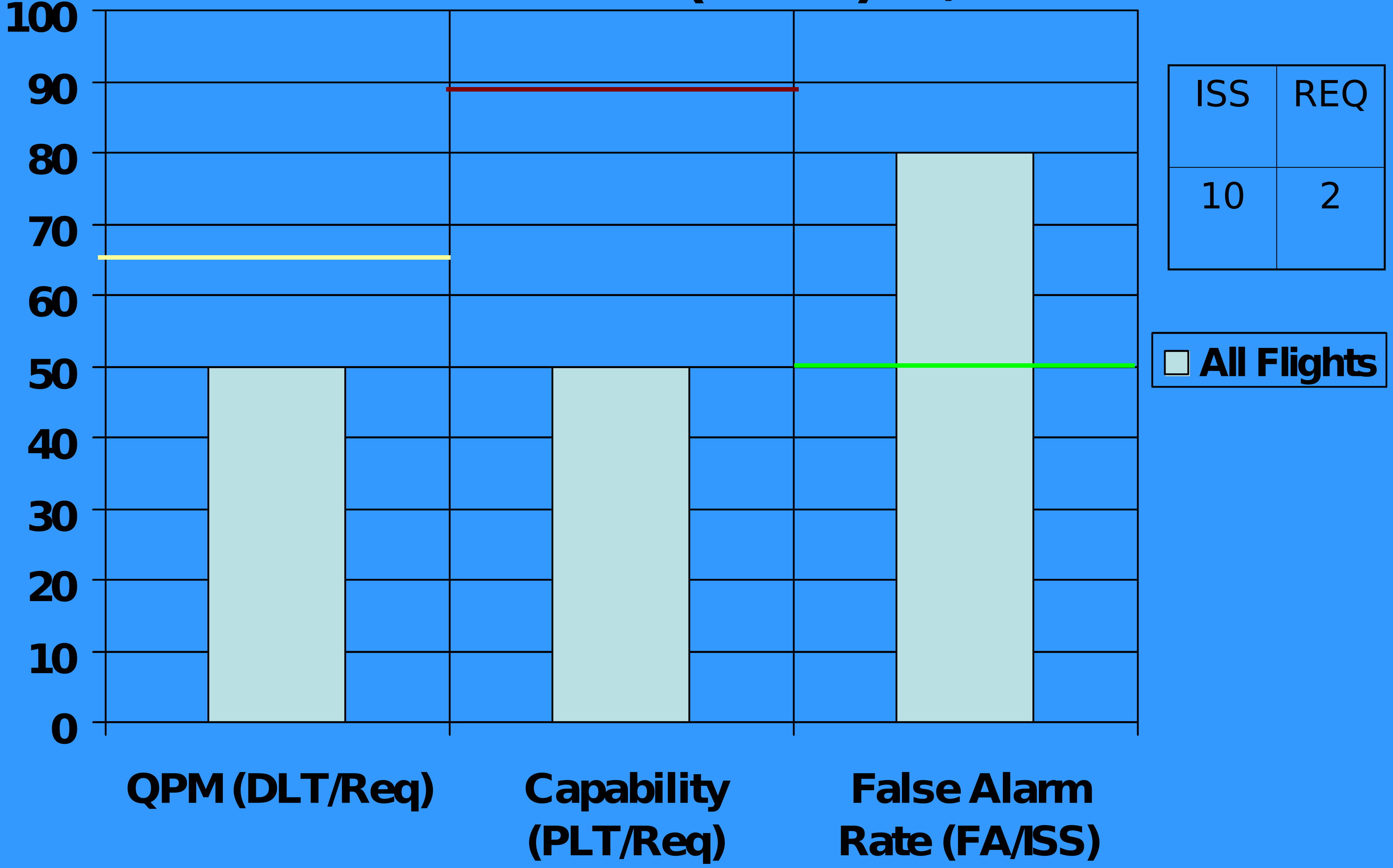
Whiteman AFB (KSZL)



Flight	ISS	REQ
A	26	14
B	9	2
C	10	4
D	6	3
All	51	23

ACC GOAL: ≥ 65% ***ACC GOAL: ≥ 90%*** ***ACC GOAL: ≤ 50%***

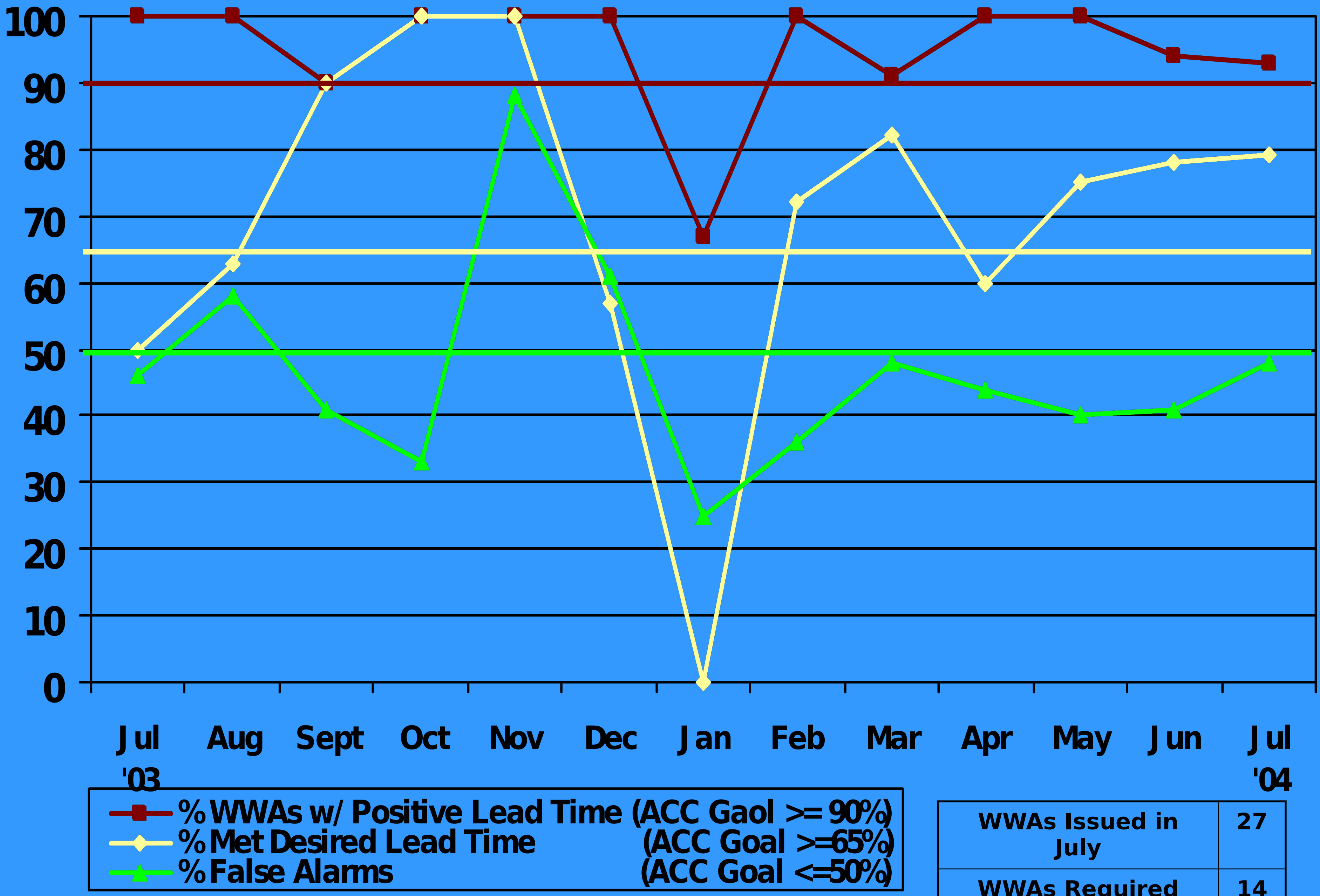
Whiteman AFB (KSZL) W/O LTG



ISS	REQ
10	2

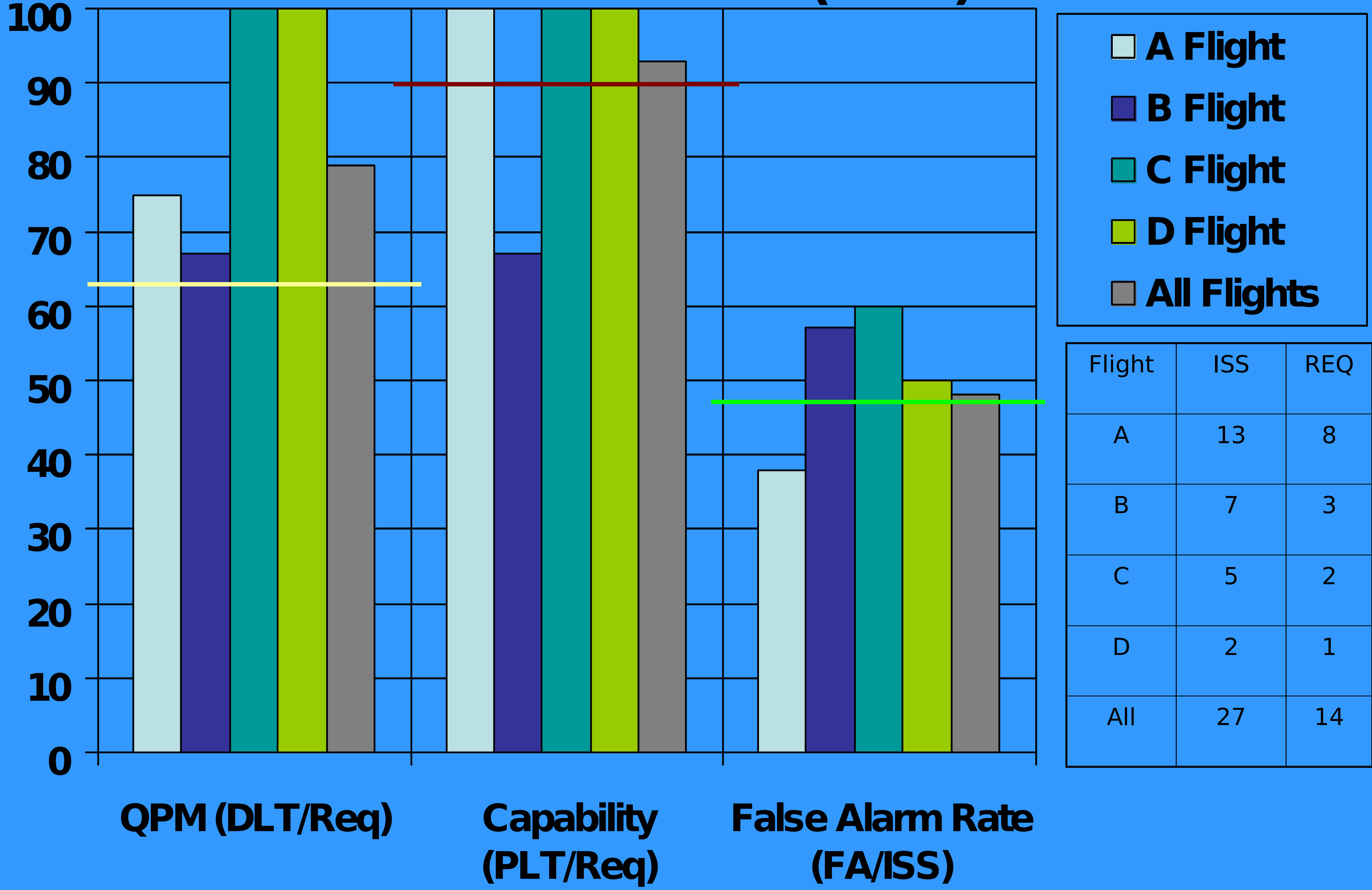
ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

McConnell AFB Watch, Warning, and Advisory (WWA) Trend



WWAs Issued in July	**27**
WWAs Required	**14**

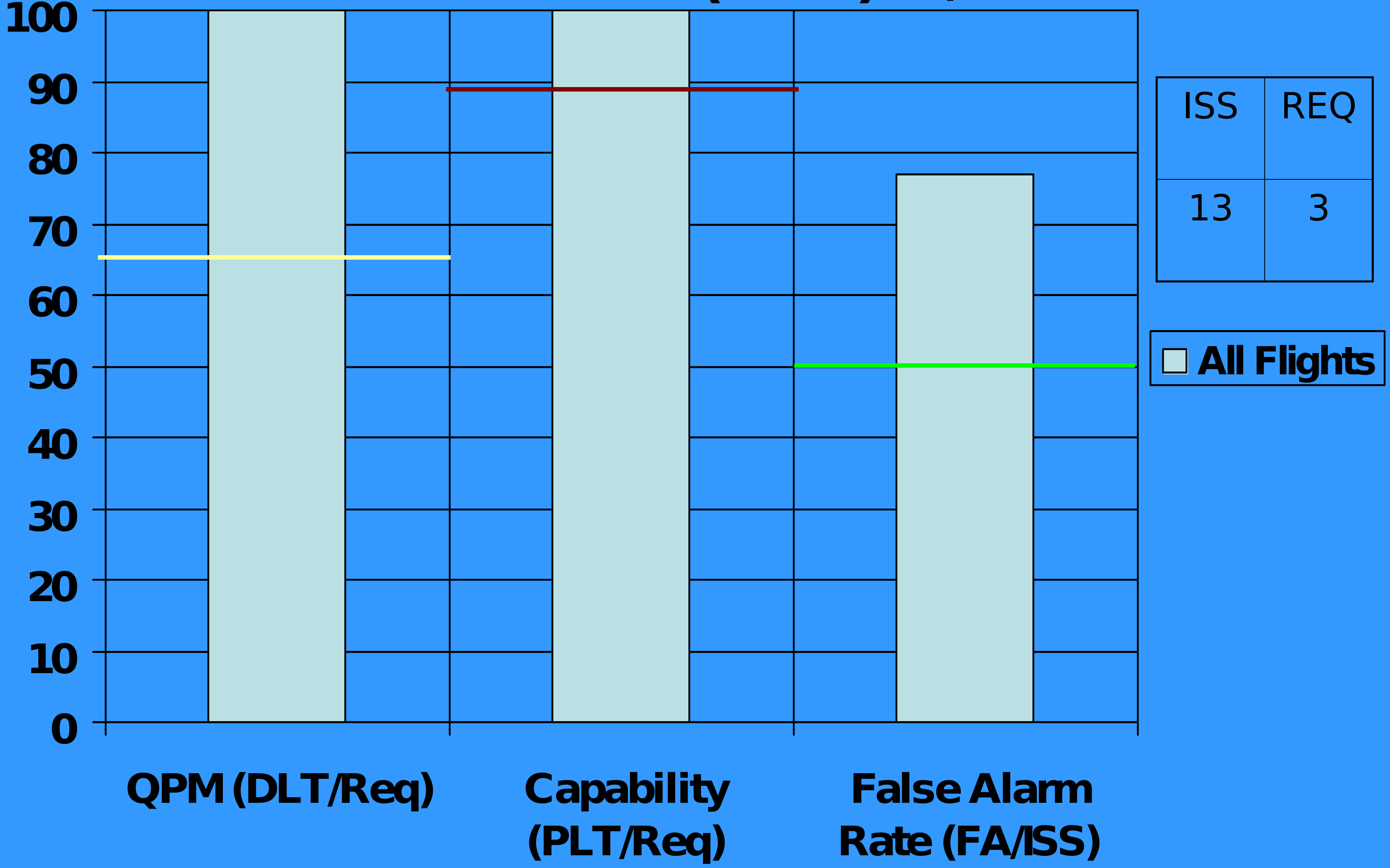
McConnell AFB (KIAB)



Flight	ISS	REQ
A	13	8
B	7	3
C	5	2
D	2	1
All	27	14

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

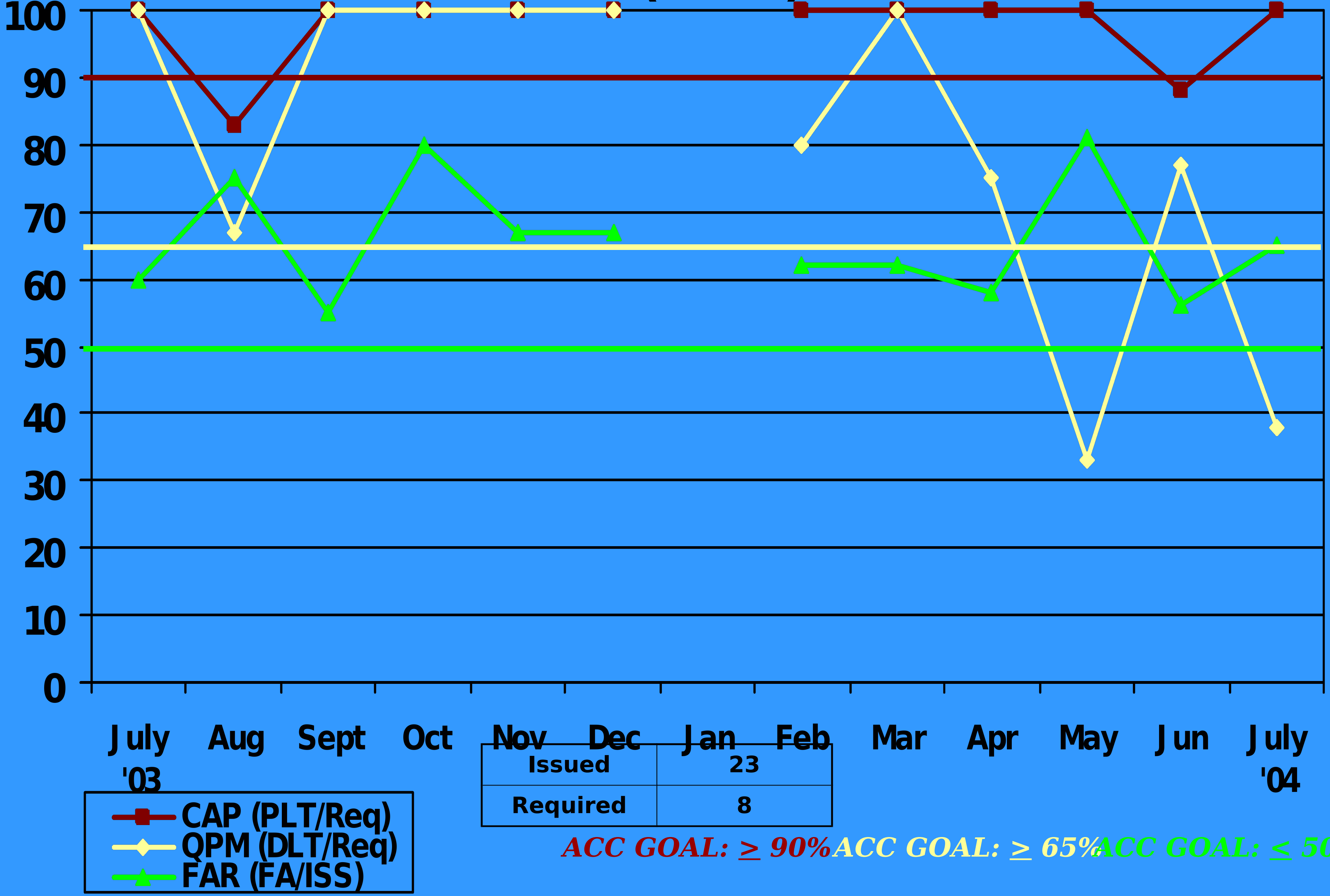
McConnell AFB (KIAB) W/O LTG



ISS	REQ
13	3

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

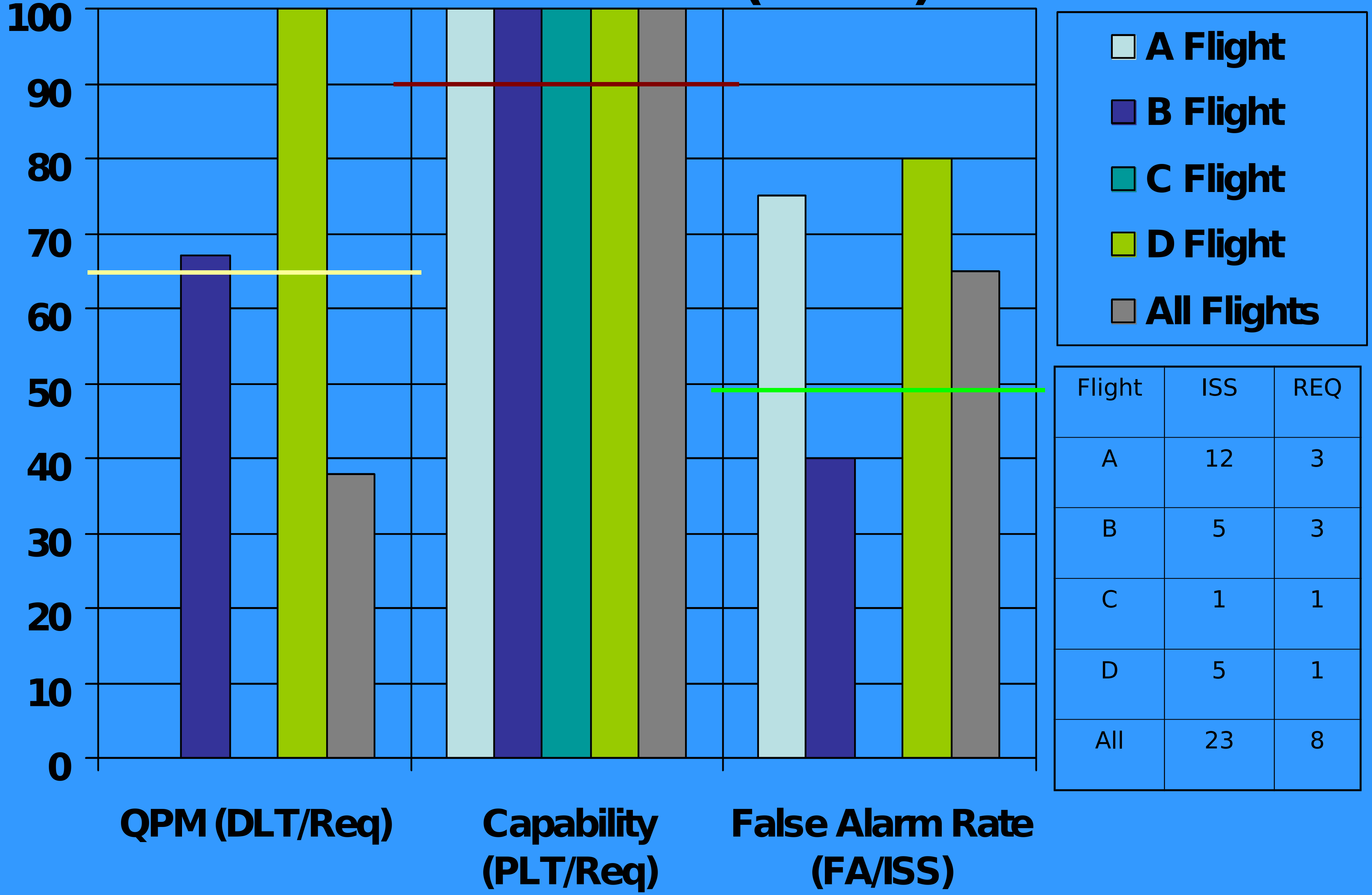
Vance AFB (KEND) Trend



Issued	23
Required	8

ACC GOAL: ≥ 90% *ACC GOAL: ≥ 65%* *ACC GOAL: ≤ 50*

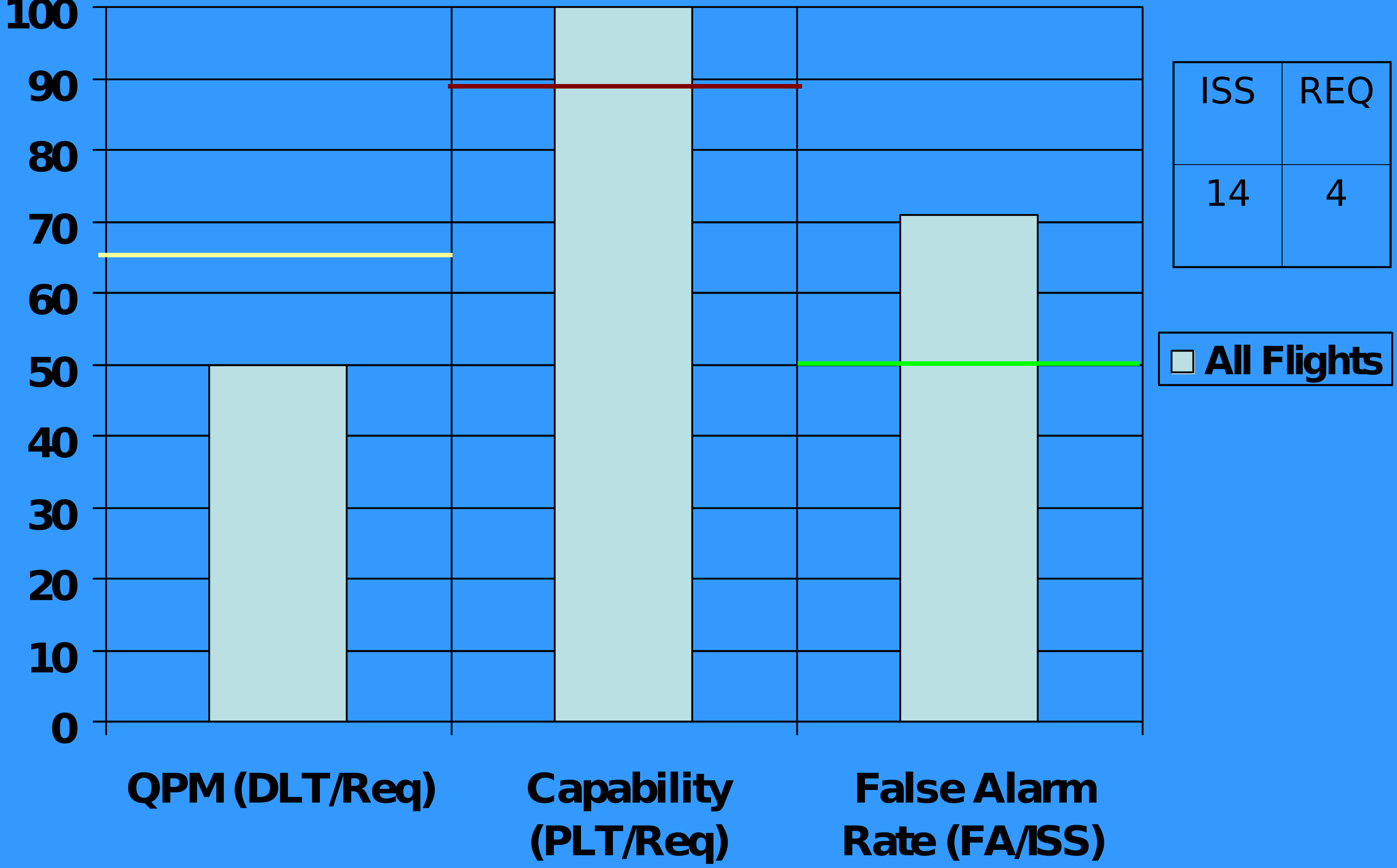
Vance AFB (KEND)



Flight	ISS	REQ
A	12	3
B	5	3
C	1	1
D	5	1
All	23	8

ACC GOAL: ≥ 65% ***ACC GOAL: ≥ 90%*** ***ACC GOAL: ≤ 50%***

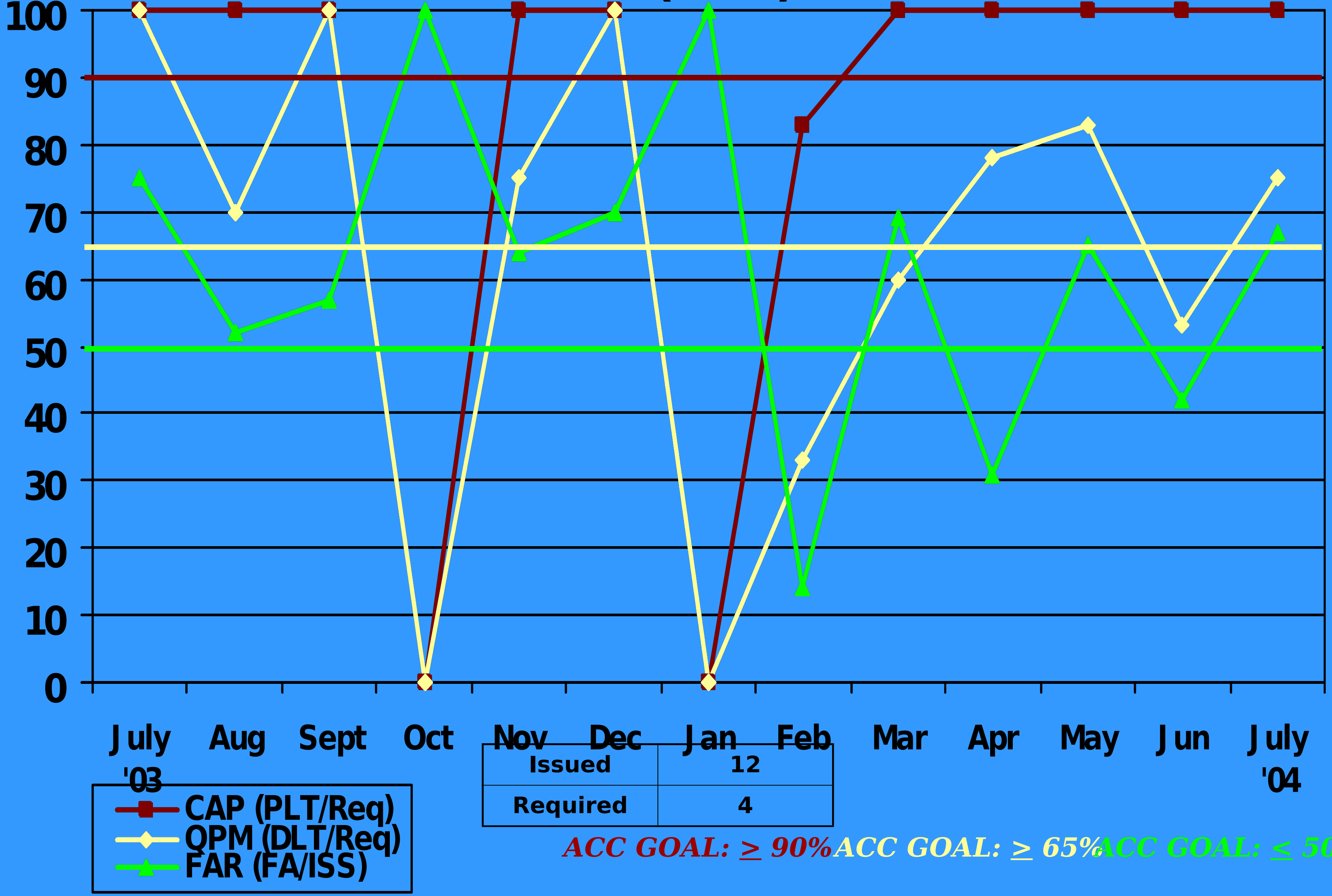
Vance AFB (KEND) W/O LTG



ISS	REQ
14	4

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

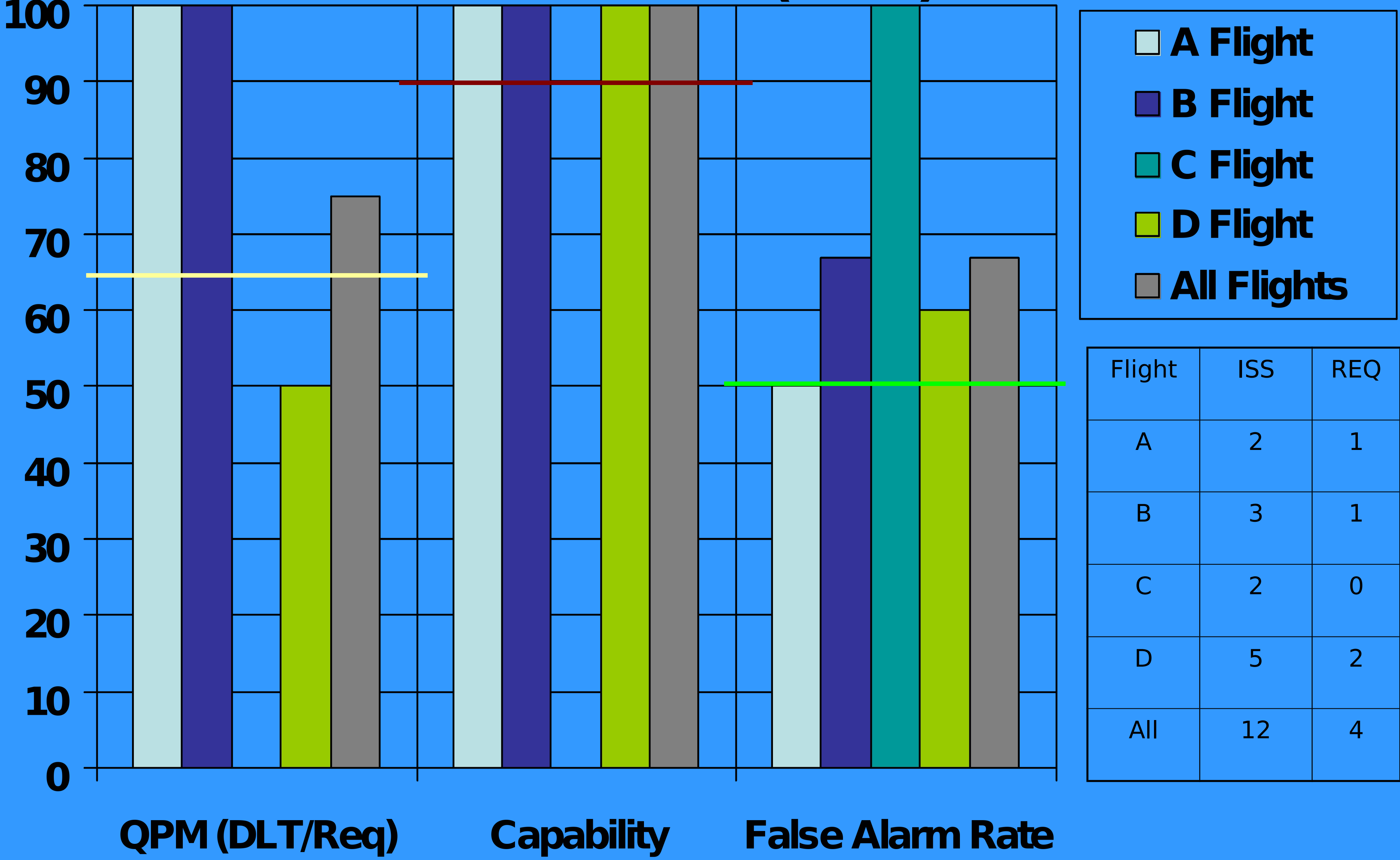
Tinker AFB (KTIK) Trend



Issued	12
Required	4

ACC GOAL: ≥ 90% *ACC GOAL: ≥ 65%* *ACC GOAL: ≤ 50*

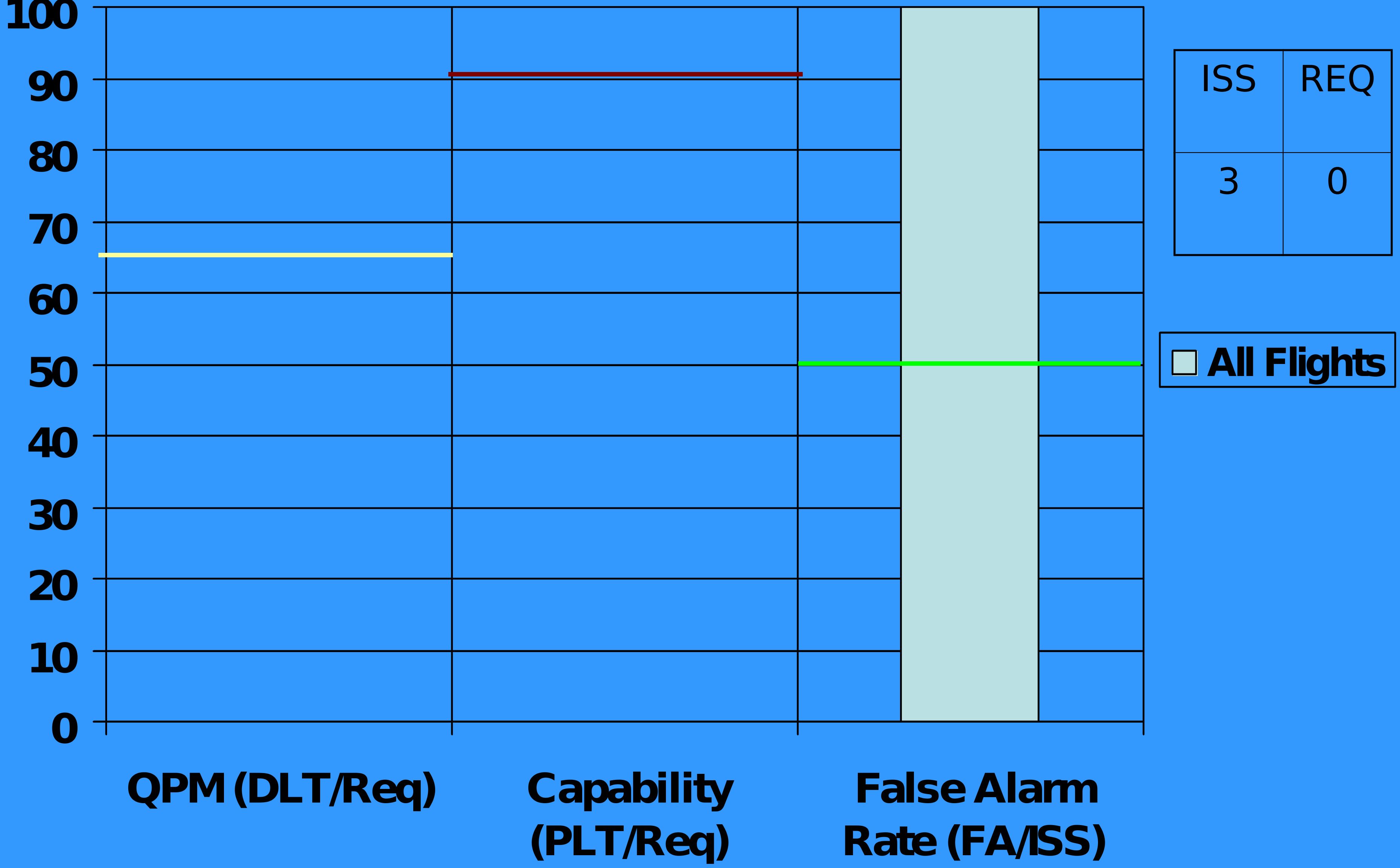
Tinker AFB (KTIK)



Flight	ISS	REQ
A	2	1
B	3	1
C	2	0
D	5	2
All	12	4

ACC GOAL: ≥ 65% ***ACC GOAL: ≥ 90%*** ***ACC GOAL: ≤ 50%***

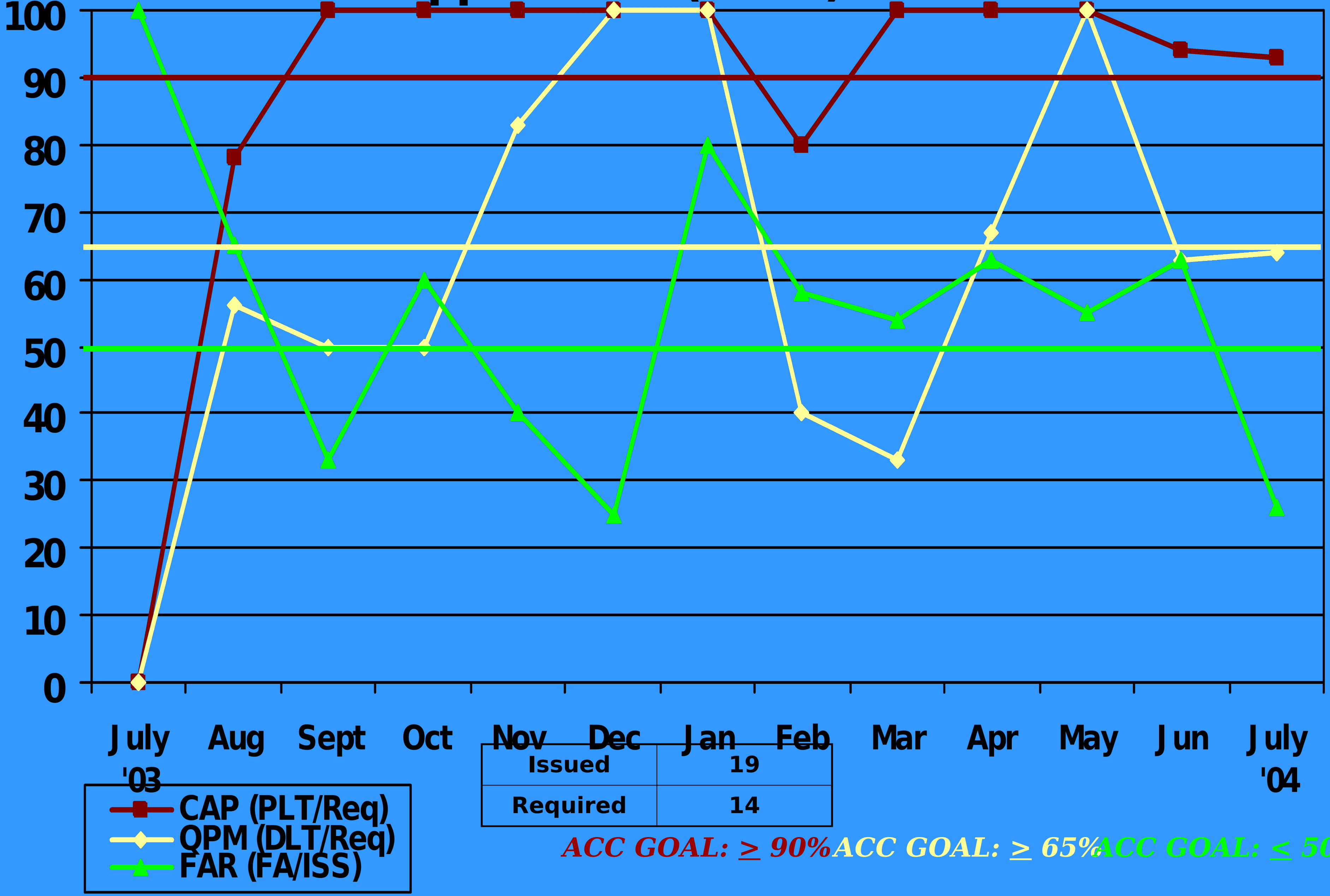
Tinker AFB (KTIK) W/O LTG



ISS	REQ
3	0

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

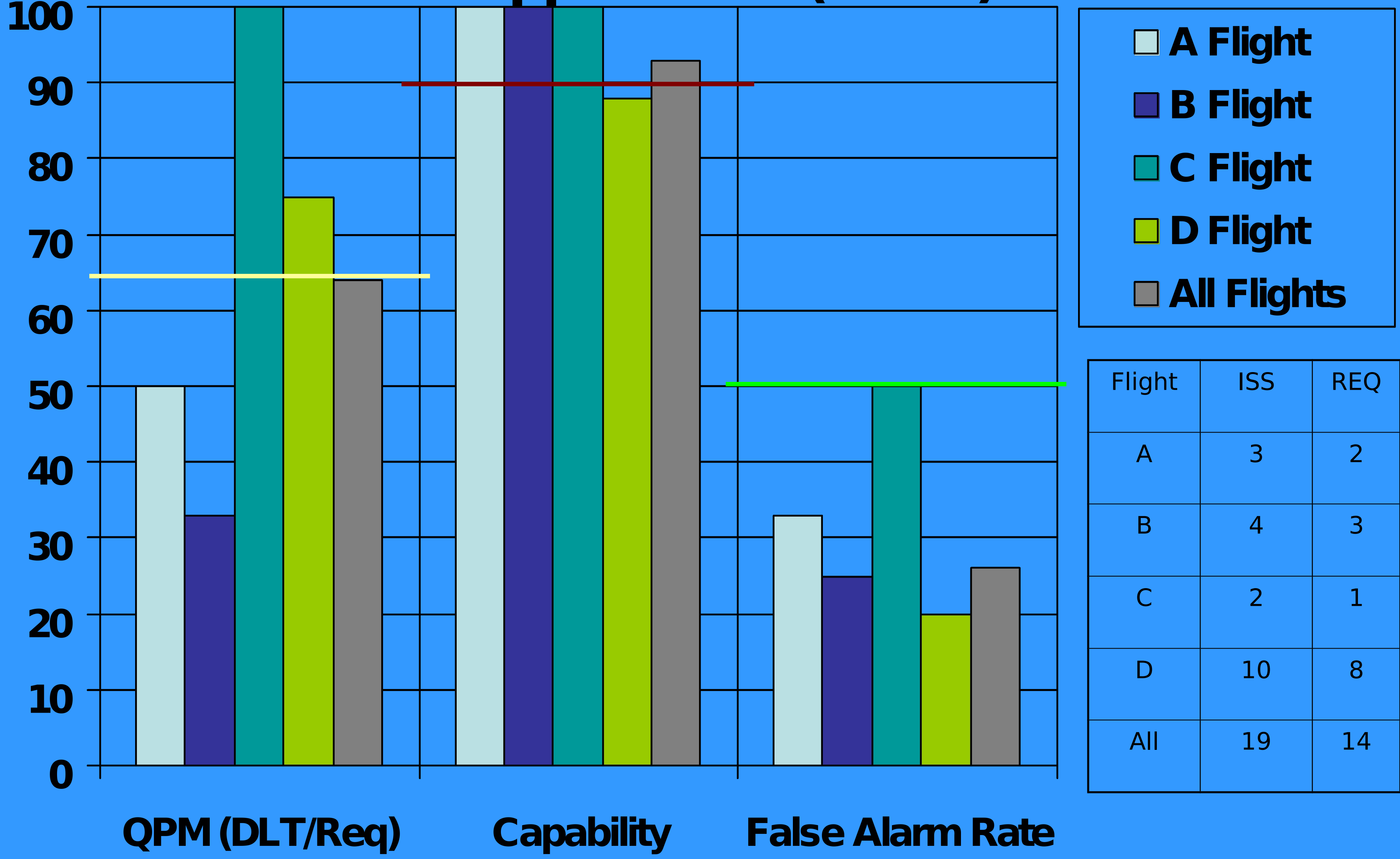
Sheppard AFB (KSHP) Trend



Issued	**19**
Required	**14**

ACC GOAL: ≥ 90% ***ACC GOAL: ≥ 65%*** ***ACC GOAL: ≤ 50***

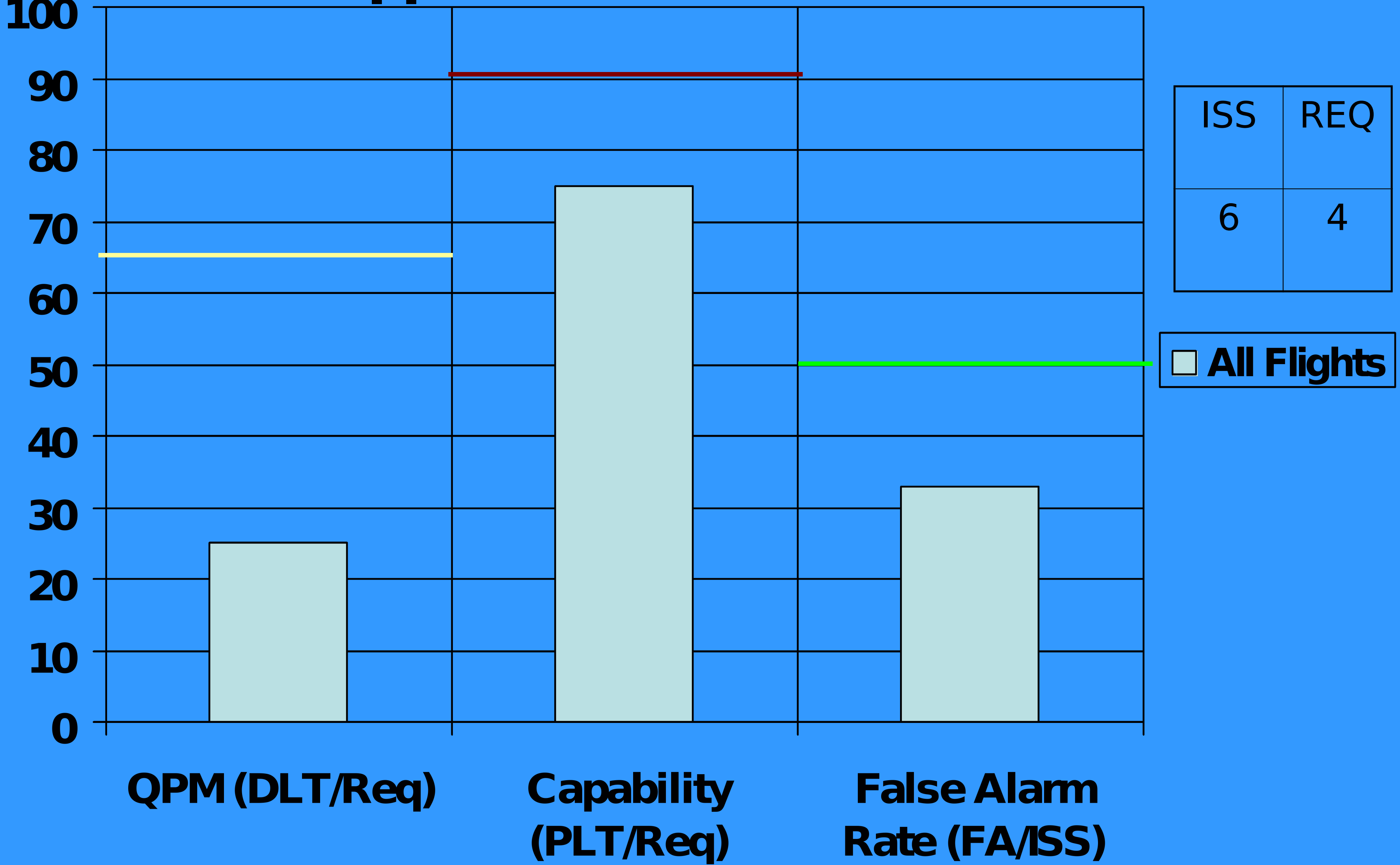
Sheppard AFB (KSHP)



Flight	ISS	REQ
A	3	2
B	4	3
C	2	1
D	10	8
All	19	14

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

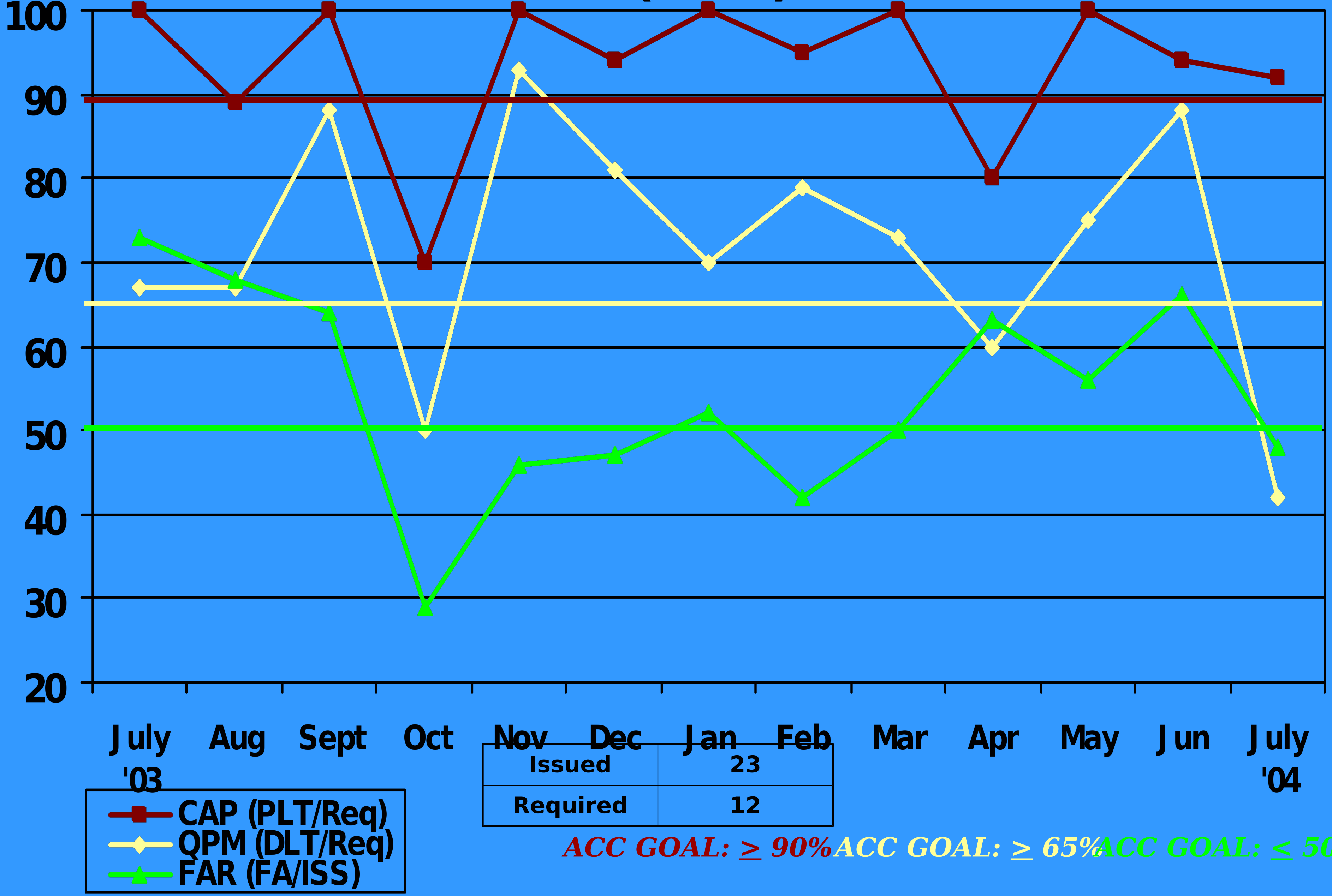
Sheppard AFB (KSHP) W/O LTG



ISS	REQ
6	4

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

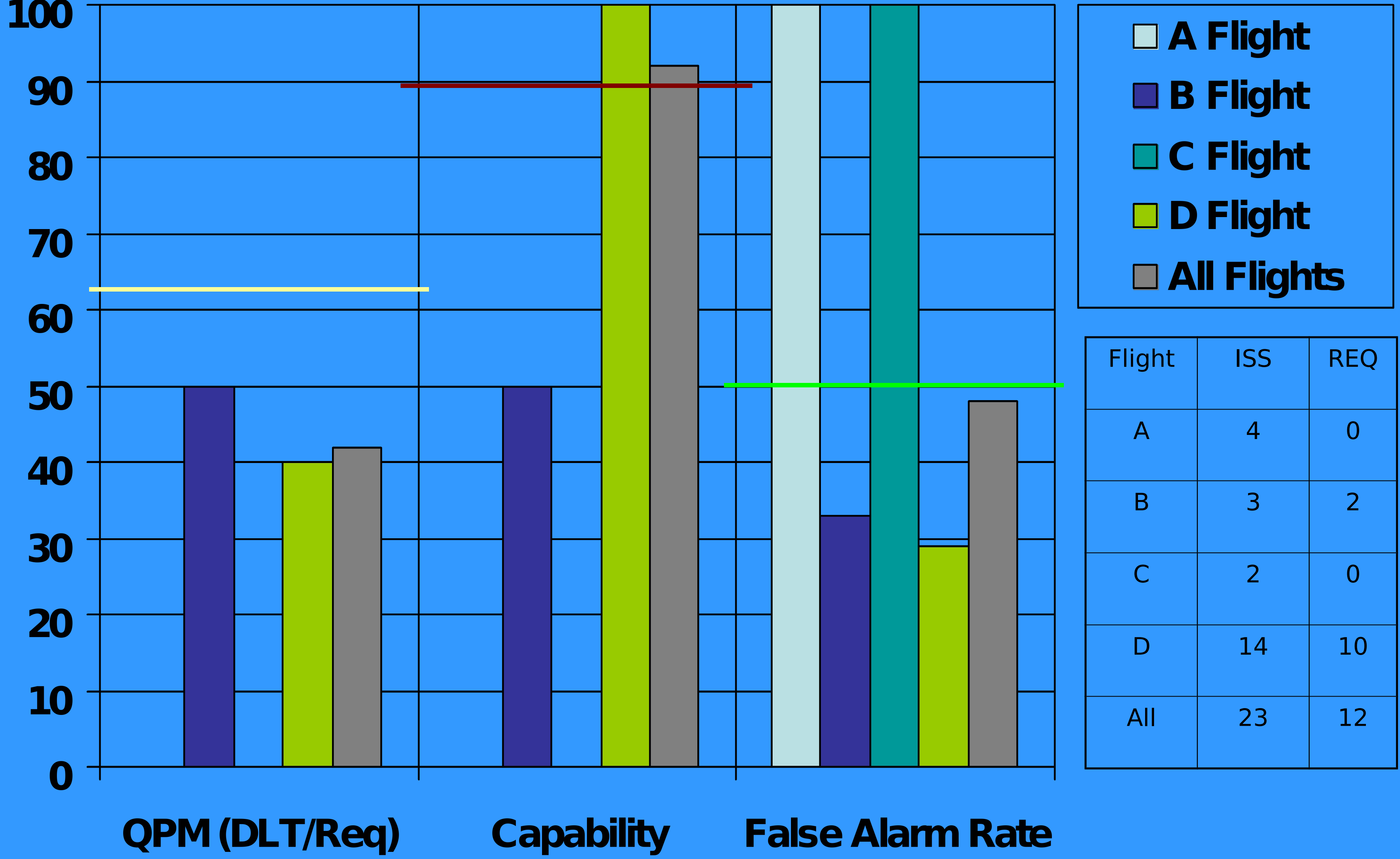
Altus AFB (KLTS) Trend



Issued	**23**
Required	**12**

ACC GOAL: ≥ 90% ***ACC GOAL: ≥ 65%*** ***ACC GOAL: ≤ 50***

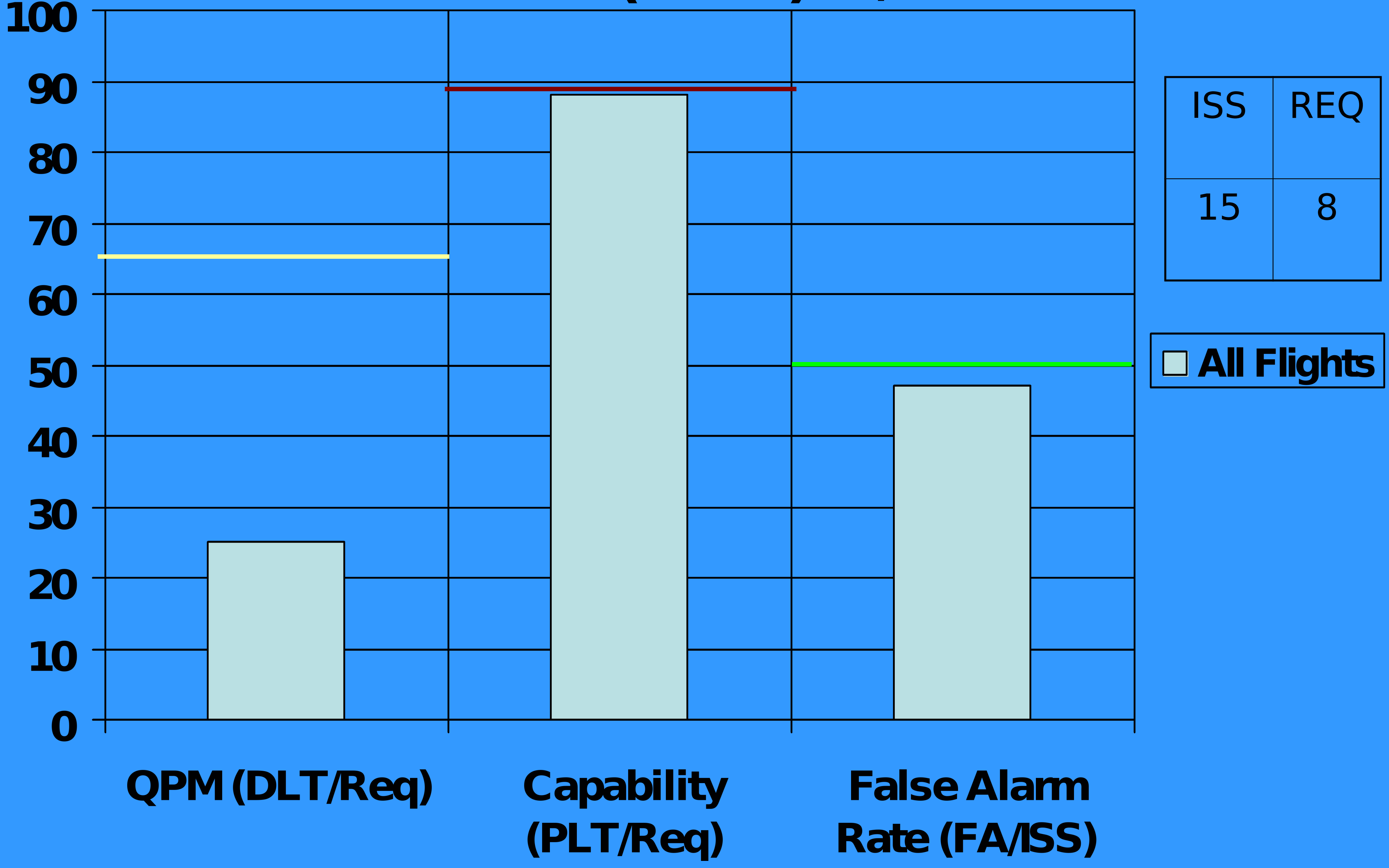
Altus AFB (KLTS)



Flight	ISS	REQ
A	4	0
B	3	2
C	2	0
D	14	10
All	23	12

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

Altus AFB (KLTS) W/O LTG

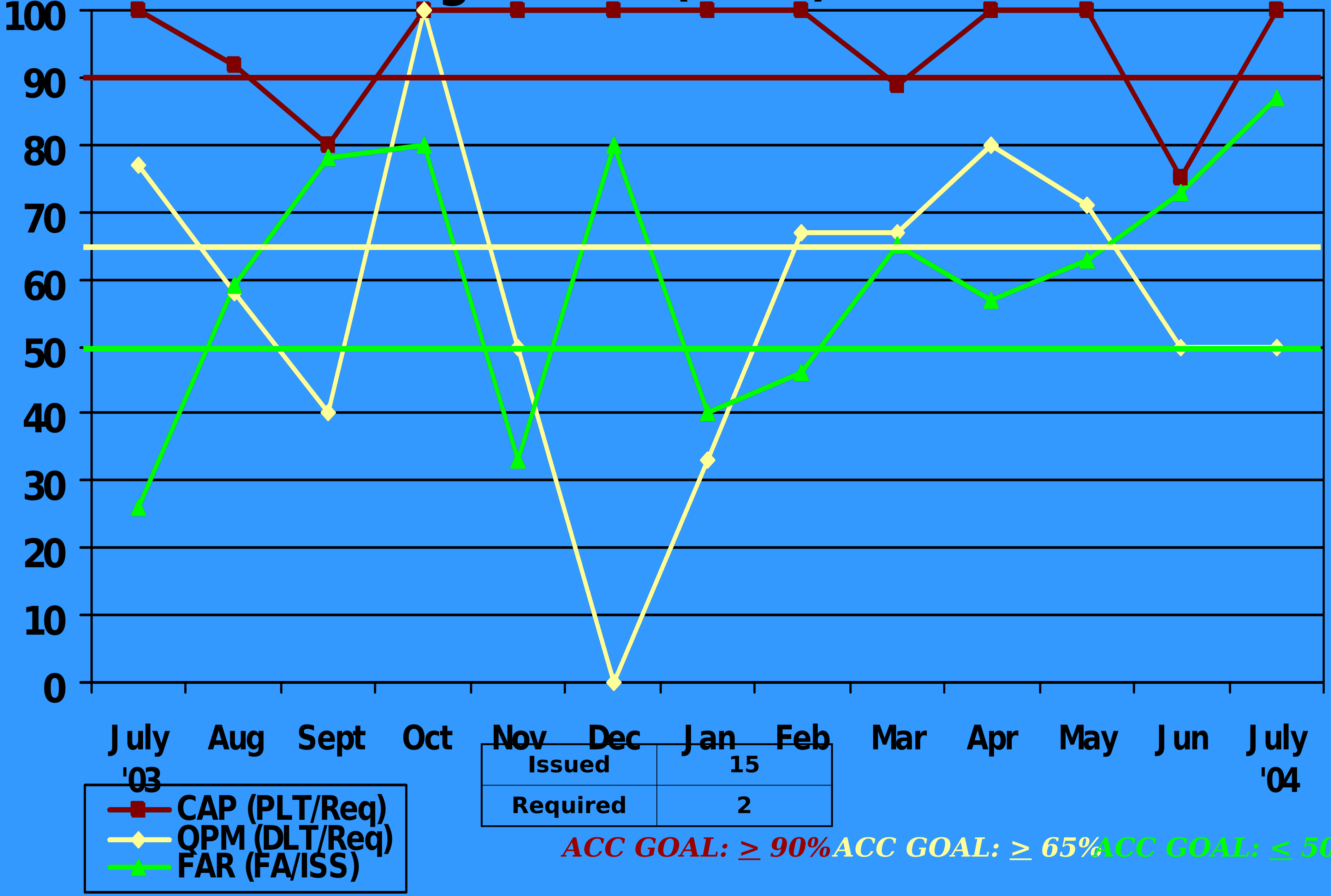


ISS	REQ
15	8

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

ZONE 2

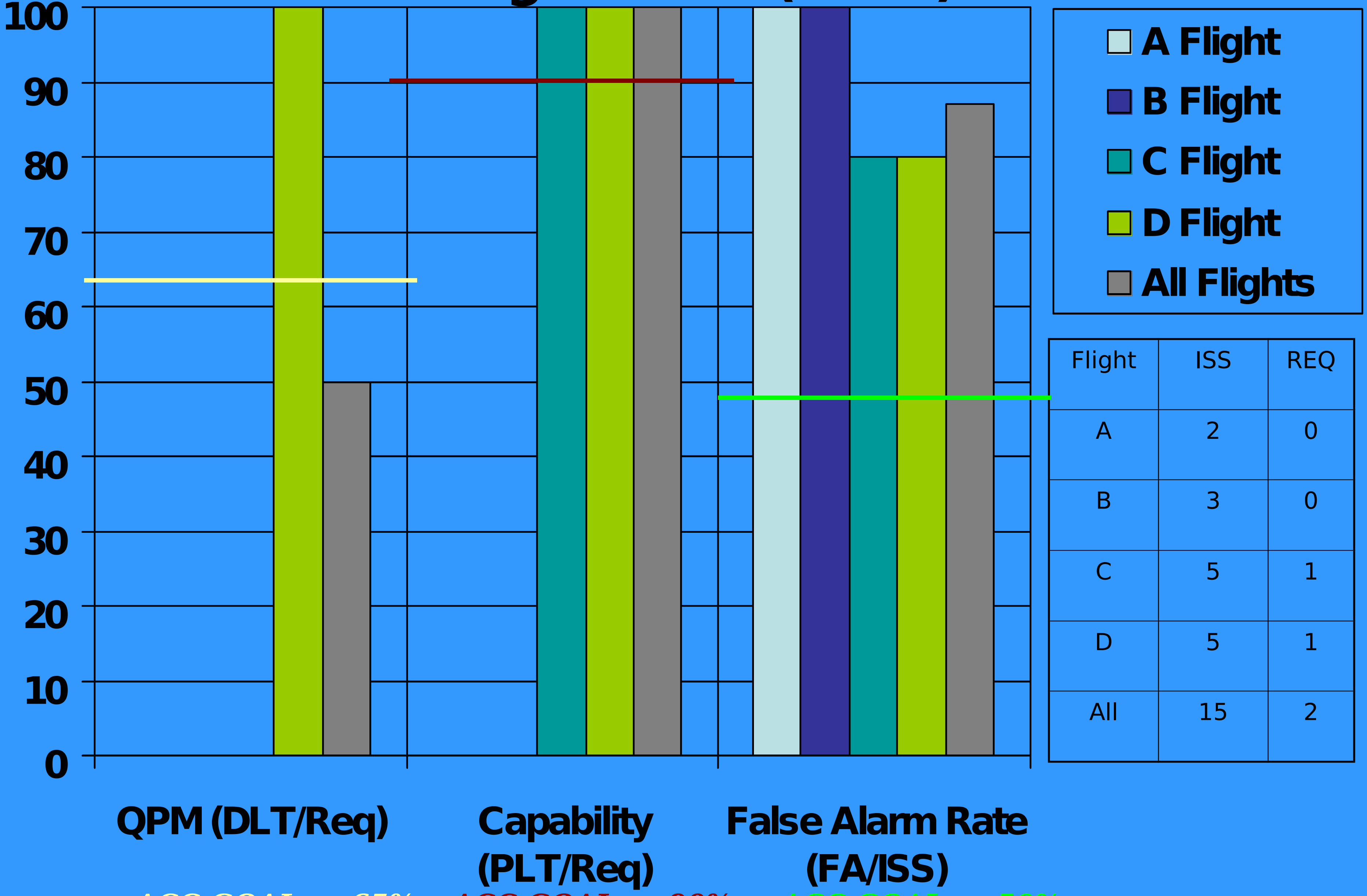
Laughlin AFB (KDLF) Trend



Issued	15
Required	2

ACC GOAL: ≥ 90% ***ACC GOAL: ≥ 65%*** ***ACC GOAL: ≤ 50***

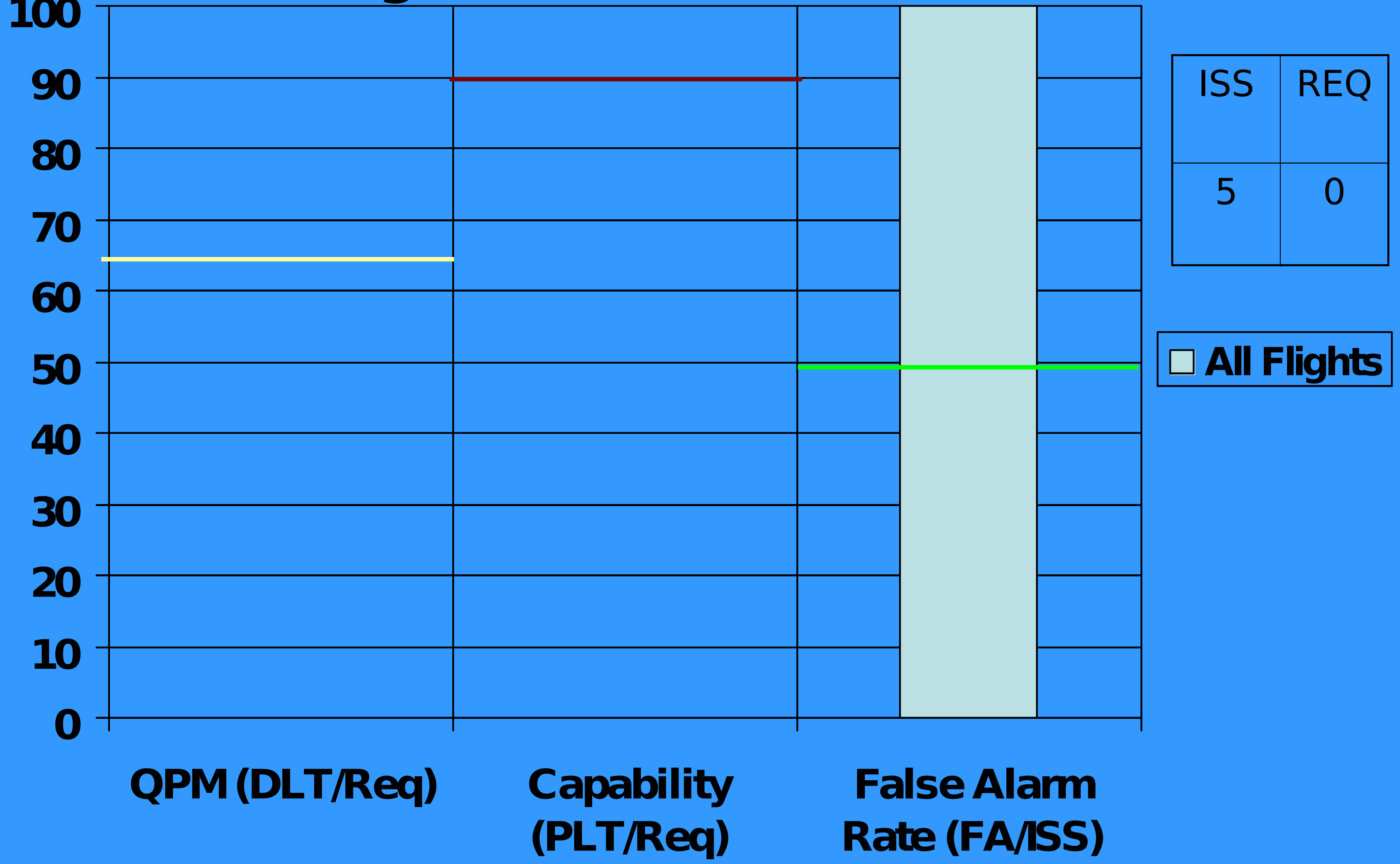
Laughlin AFB (KDLF)



Flight	ISS	REQ
A	2	0
B	3	0
C	5	1
D	5	1
All	15	2

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

Laughlin AFB (KDLF) W/O LTG



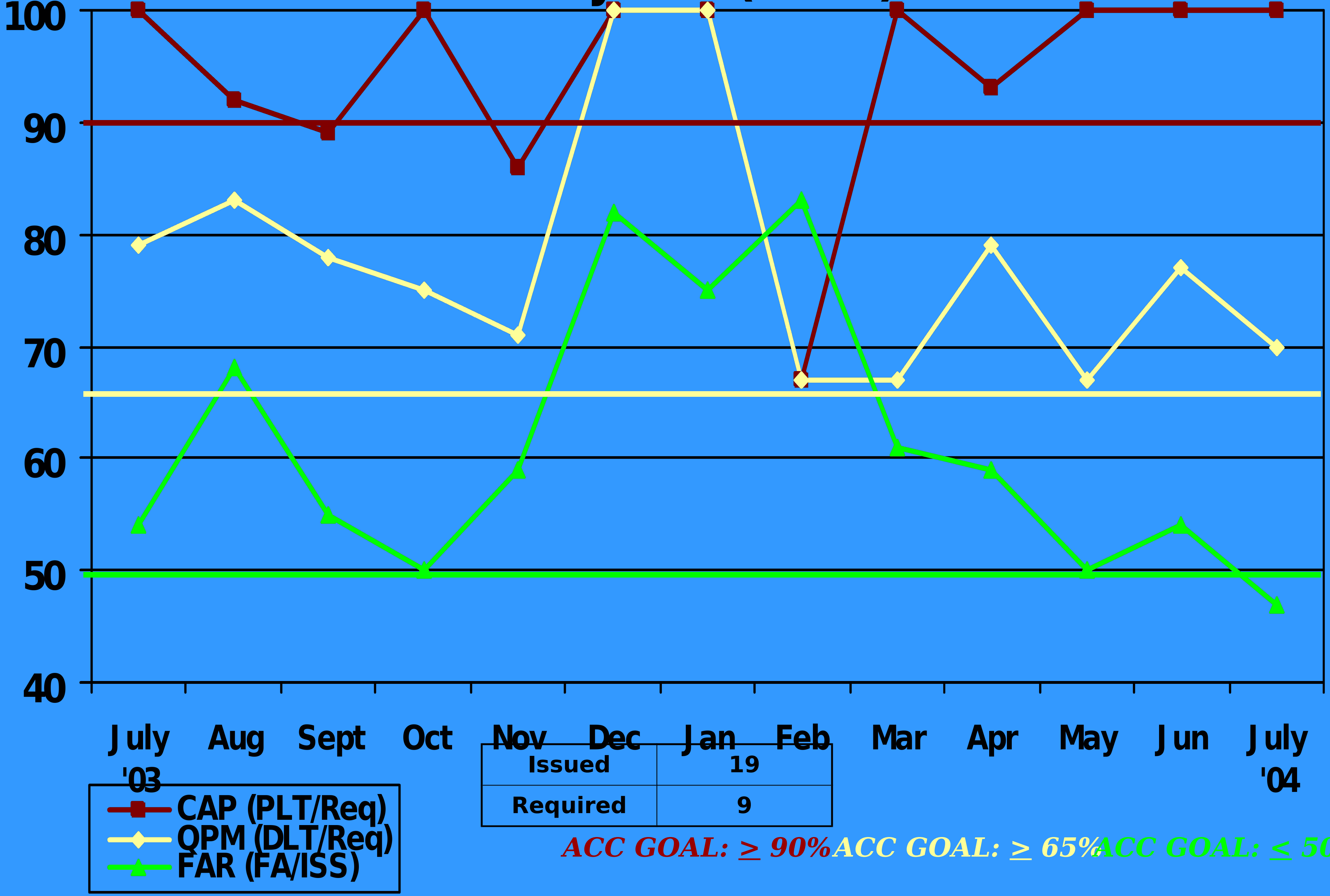
ISS	REQ
5	0

ACC GOAL: ≥ 65%

ACC GOAL: ≥ 90%

ACC GOAL: ≤ 50%

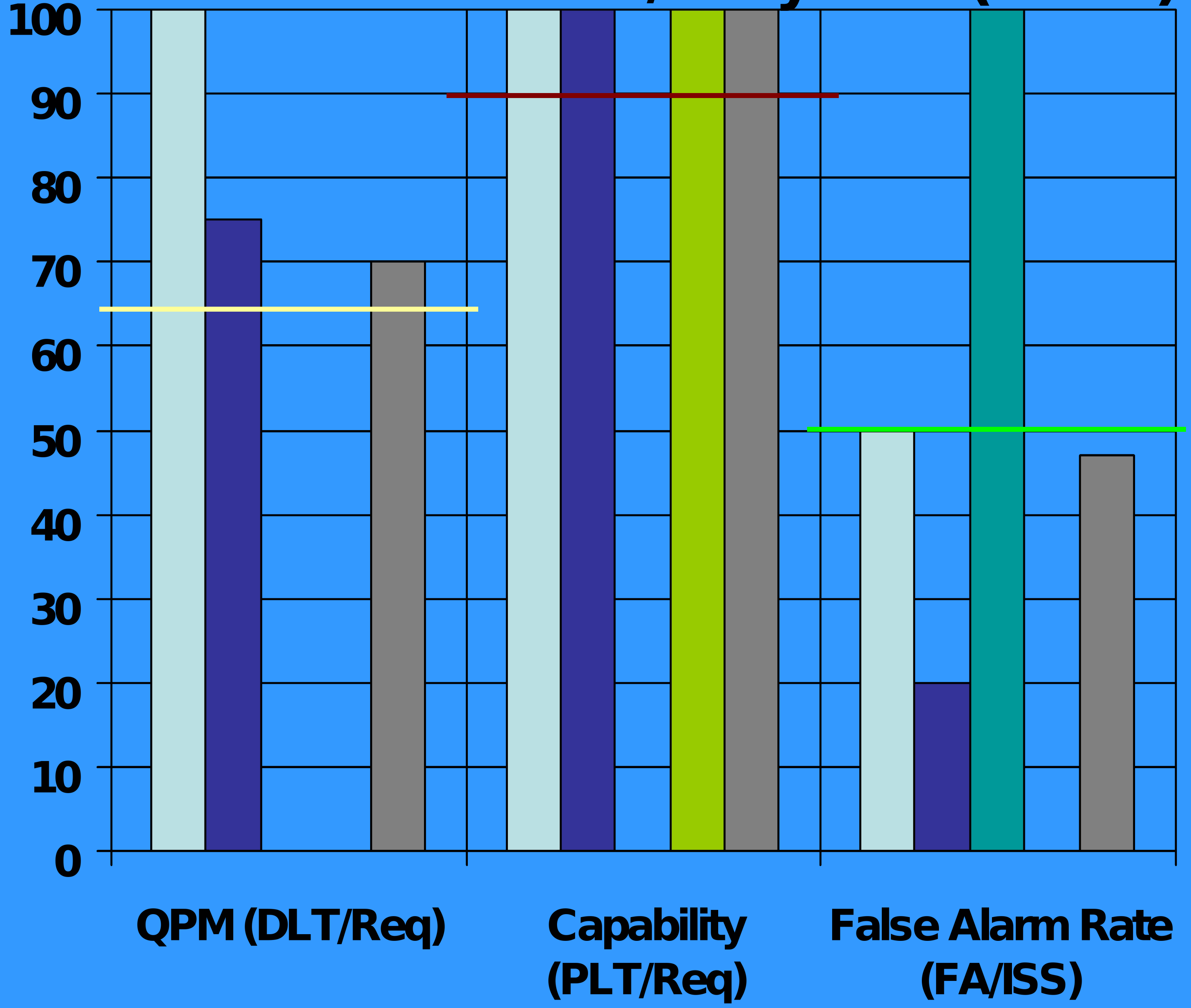
Lackland/Kelly AFB (KSKF) Trend



Issued	19
Required	9

ACC GOAL: ≥ 90% *ACC GOAL: ≥ 65%* *ACC GOAL: ≤ 50*

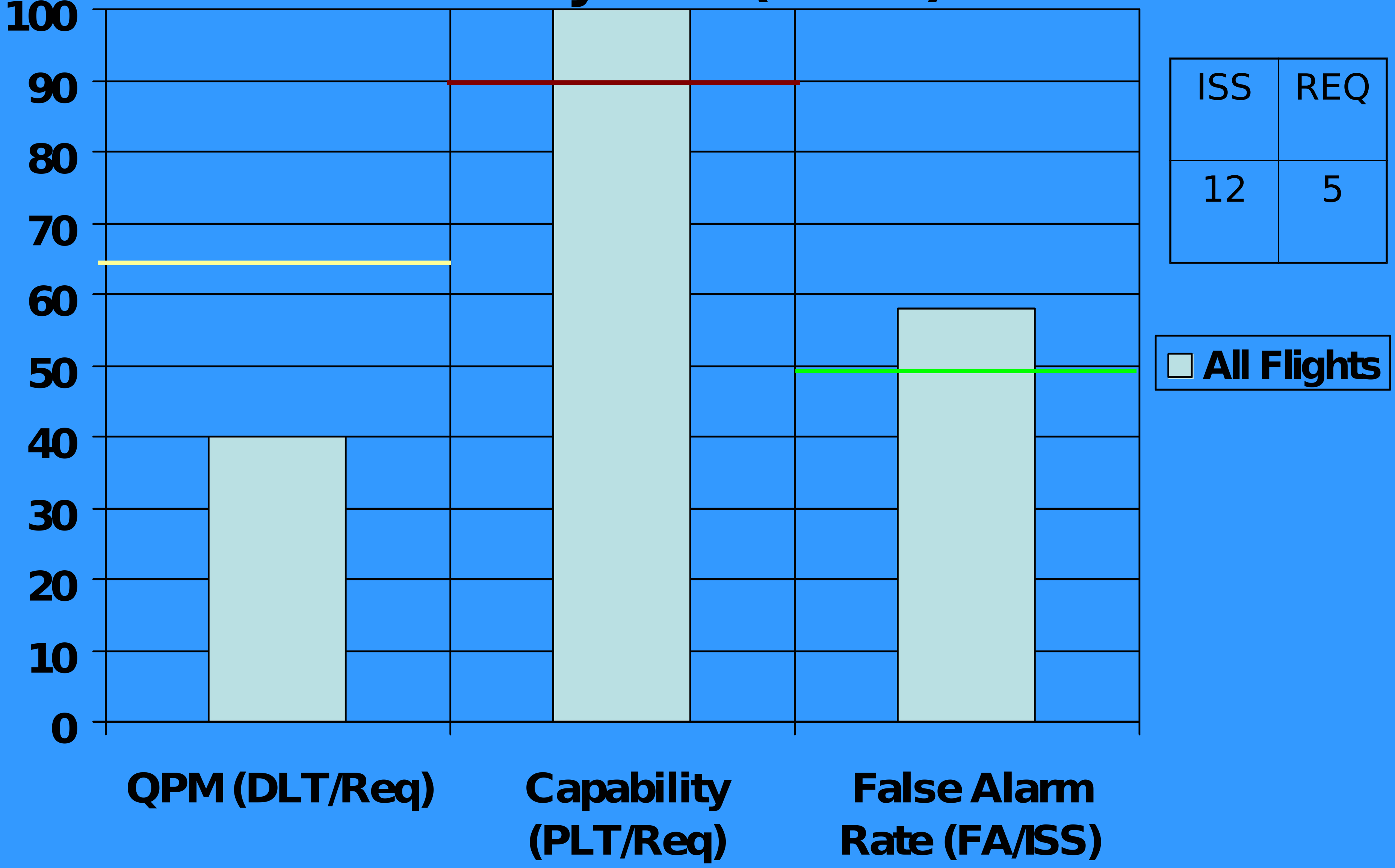
Lackland/Kelly AFB (KSKF)



Flight	ISS	REQ
A	2	1
B	10	8
C	6	0
D	1	1
All	19	9

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

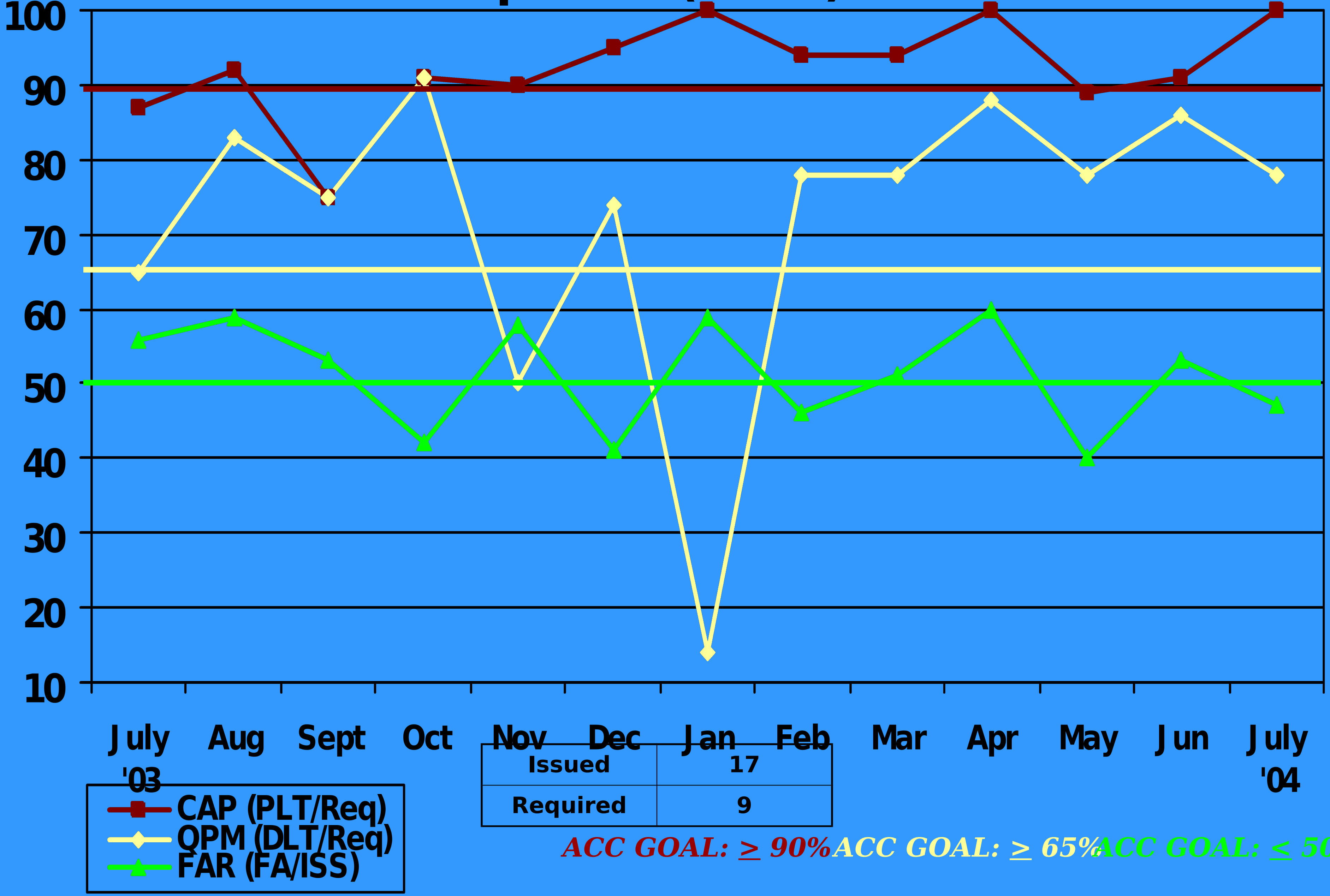
Lackland/Kelly AFB (KSKF) W/O LTG



ISS	REQ
12	5

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

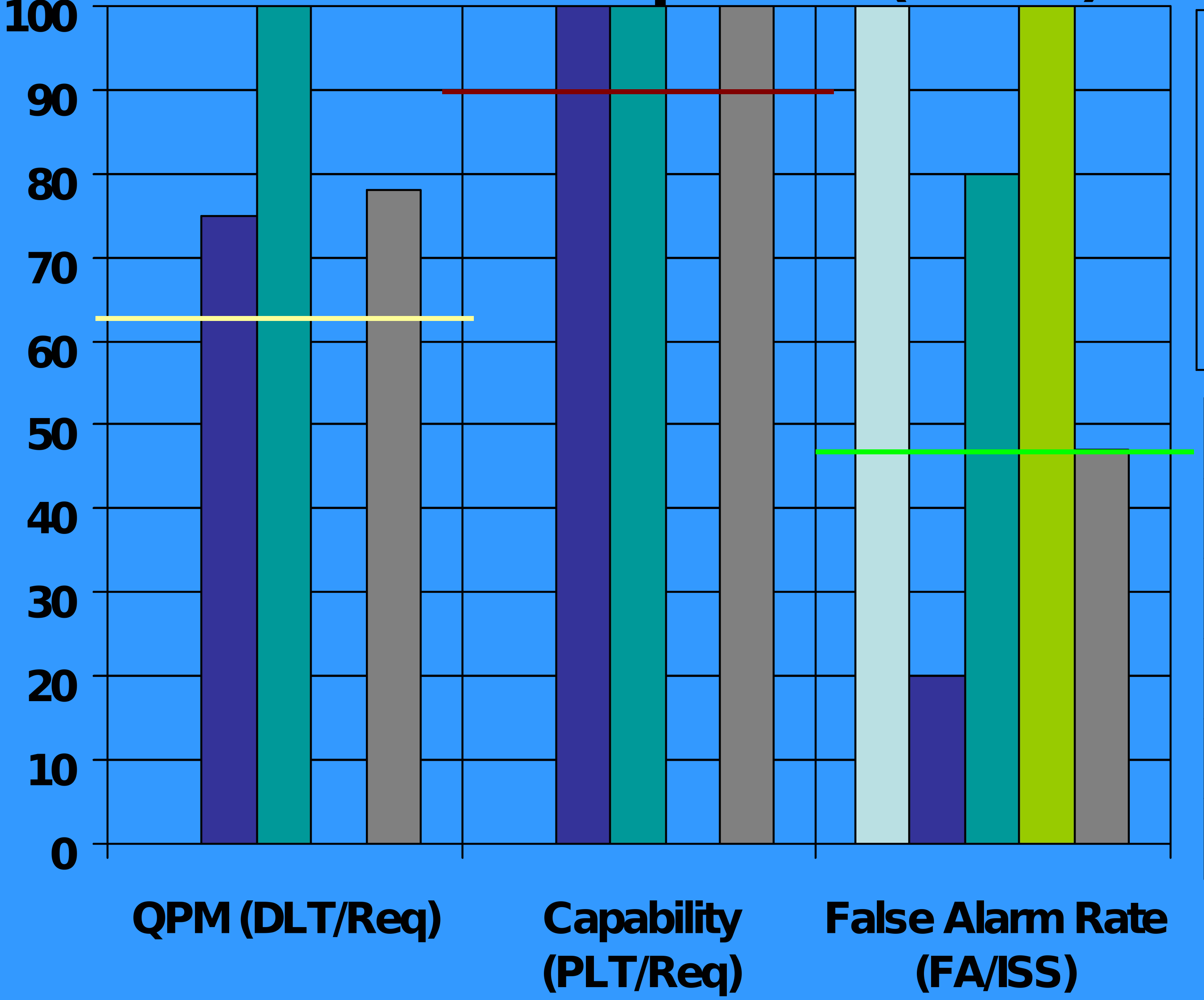
Randolph AFB (KRND) Trend



Issued	17
Required	9

ACC GOAL: ≥ 90% *ACC GOAL: ≥ 65%* *ACC GOAL: ≤ 50*

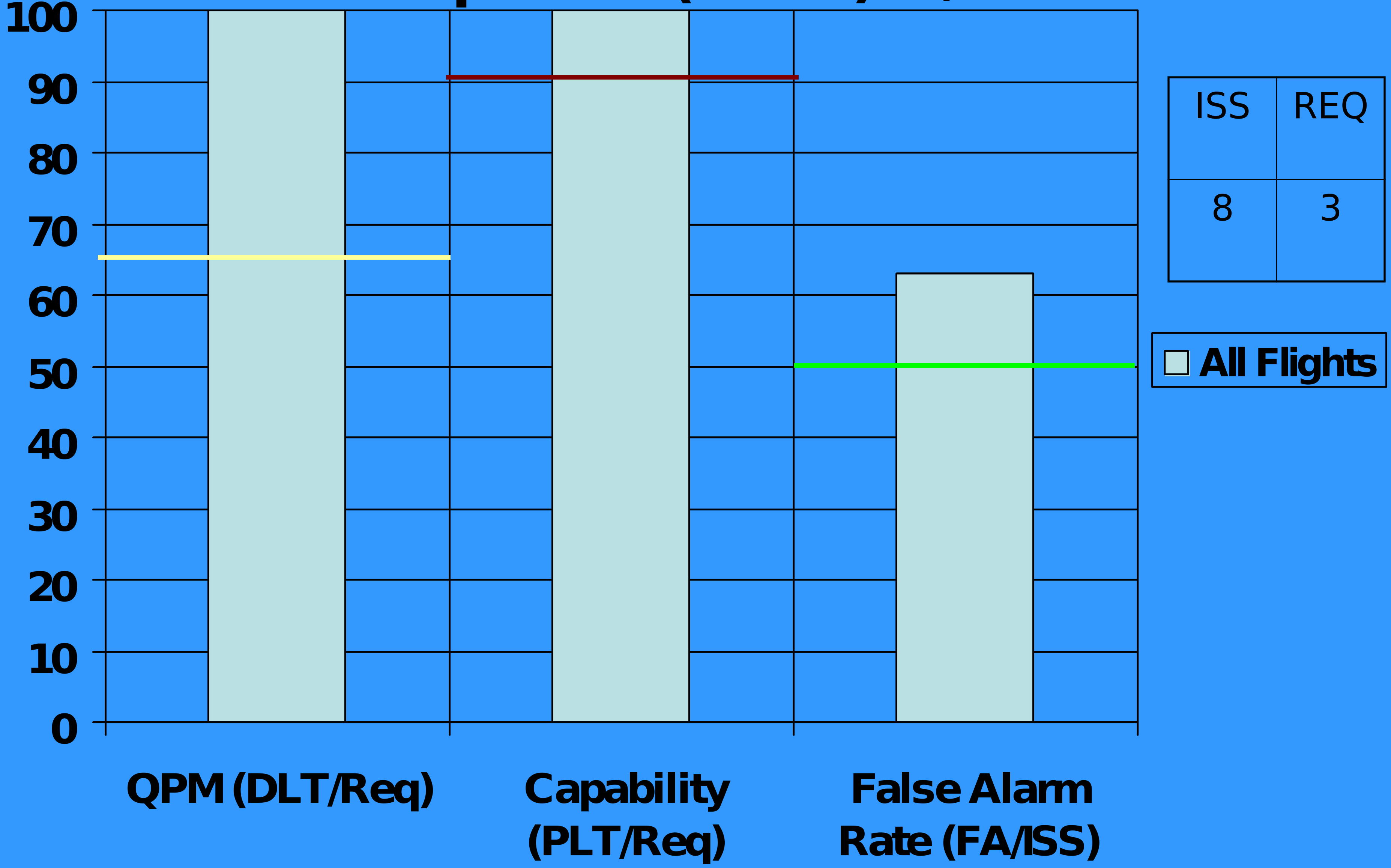
Randolph AFB (KRND)



Flight	ISS	REQ
A	1	0
B	10	8
C	5	1
D	1	0
All	17	9

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

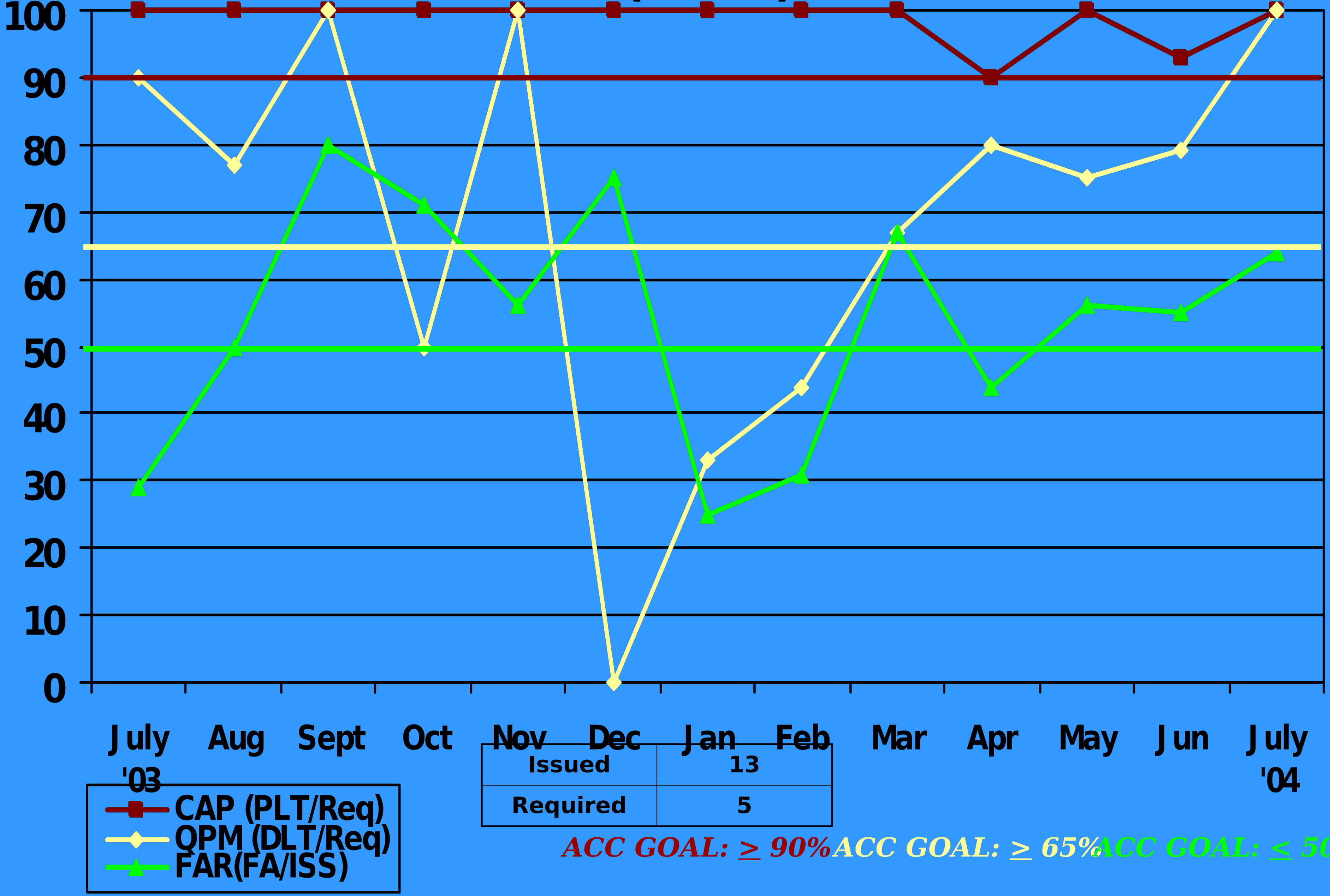
Randolph AFB (KRND) W/O LTG



ISS	REQ
8	3

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

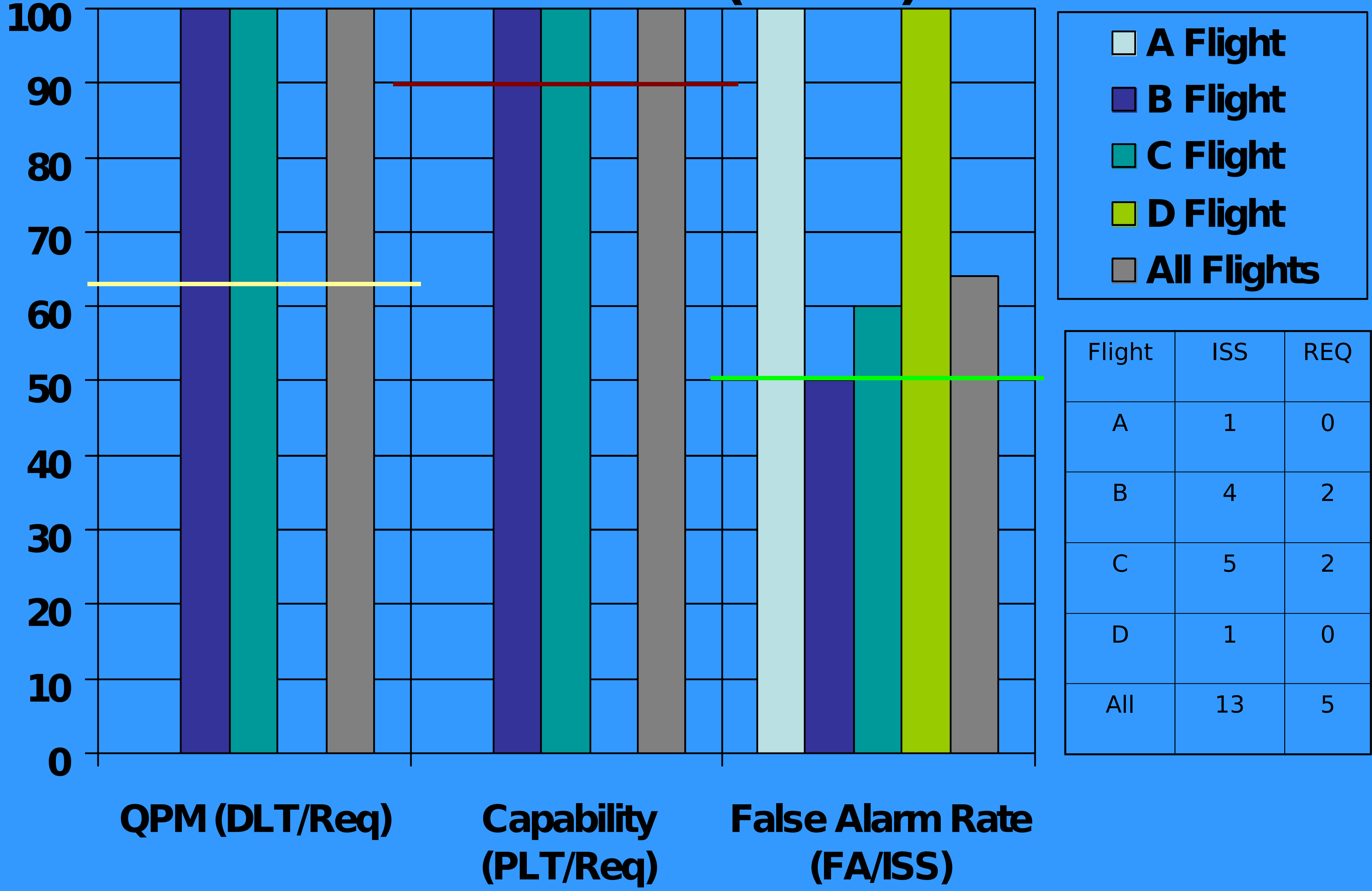
Fort Hood (KGRK) Trend



Issued	13
Required	5

ACC GOAL: ≥ 90% *ACC GOAL: ≥ 65%* *ACC GOAL: ≤ 50*

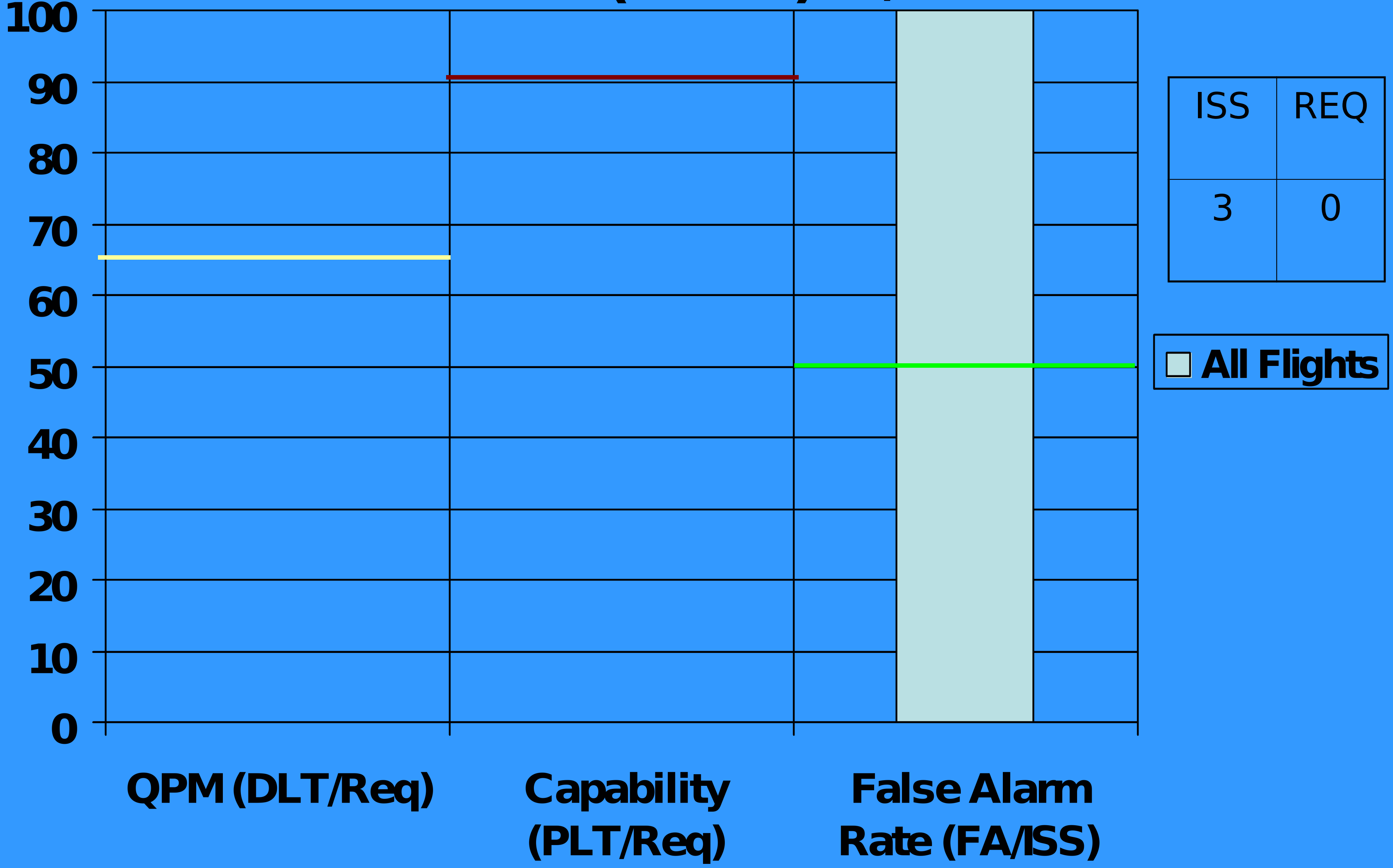
Fort Hood (KGRK)



Flight	ISS	REQ
A	1	0
B	4	2
C	5	2
D	1	0
All	13	5

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

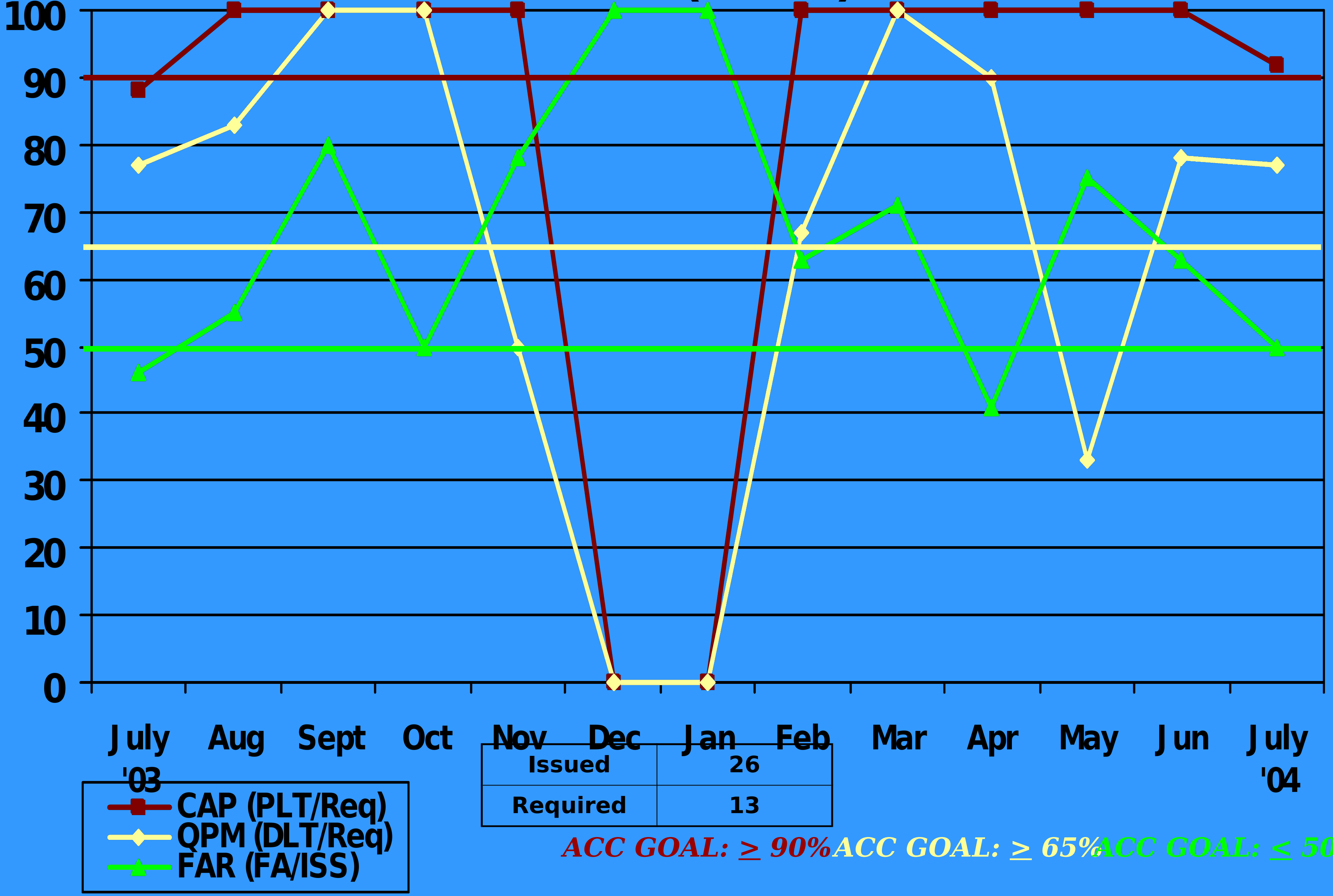
Fort Hood (KGRK) W/O LTG



ISS	REQ
3	0

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

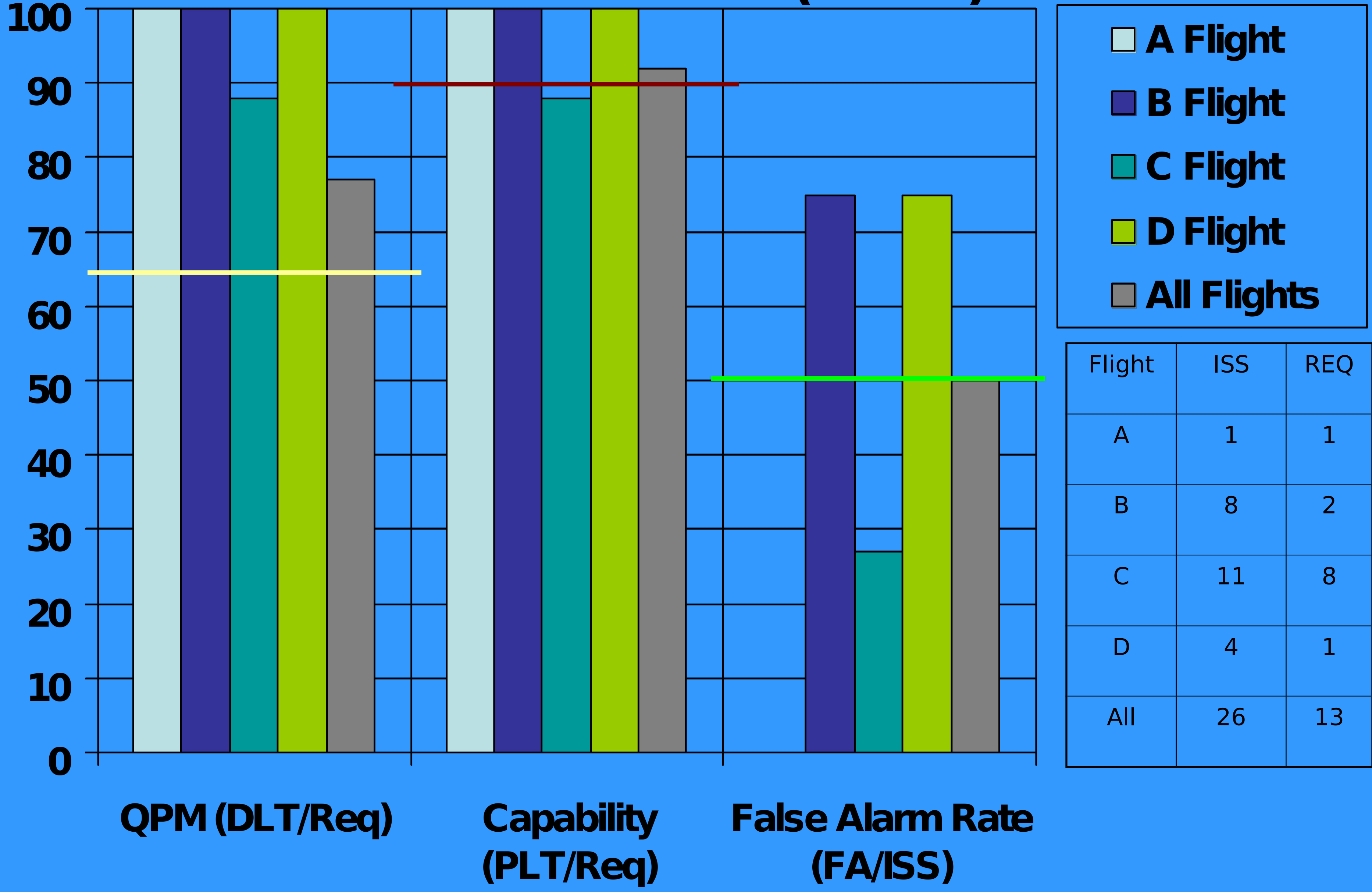
Columbus AFB (KCBM) Trend



Issued	26
Required	13

ACC GOAL: ≥ 90% *ACC GOAL: ≥ 65%* *ACC GOAL: ≤ 50*

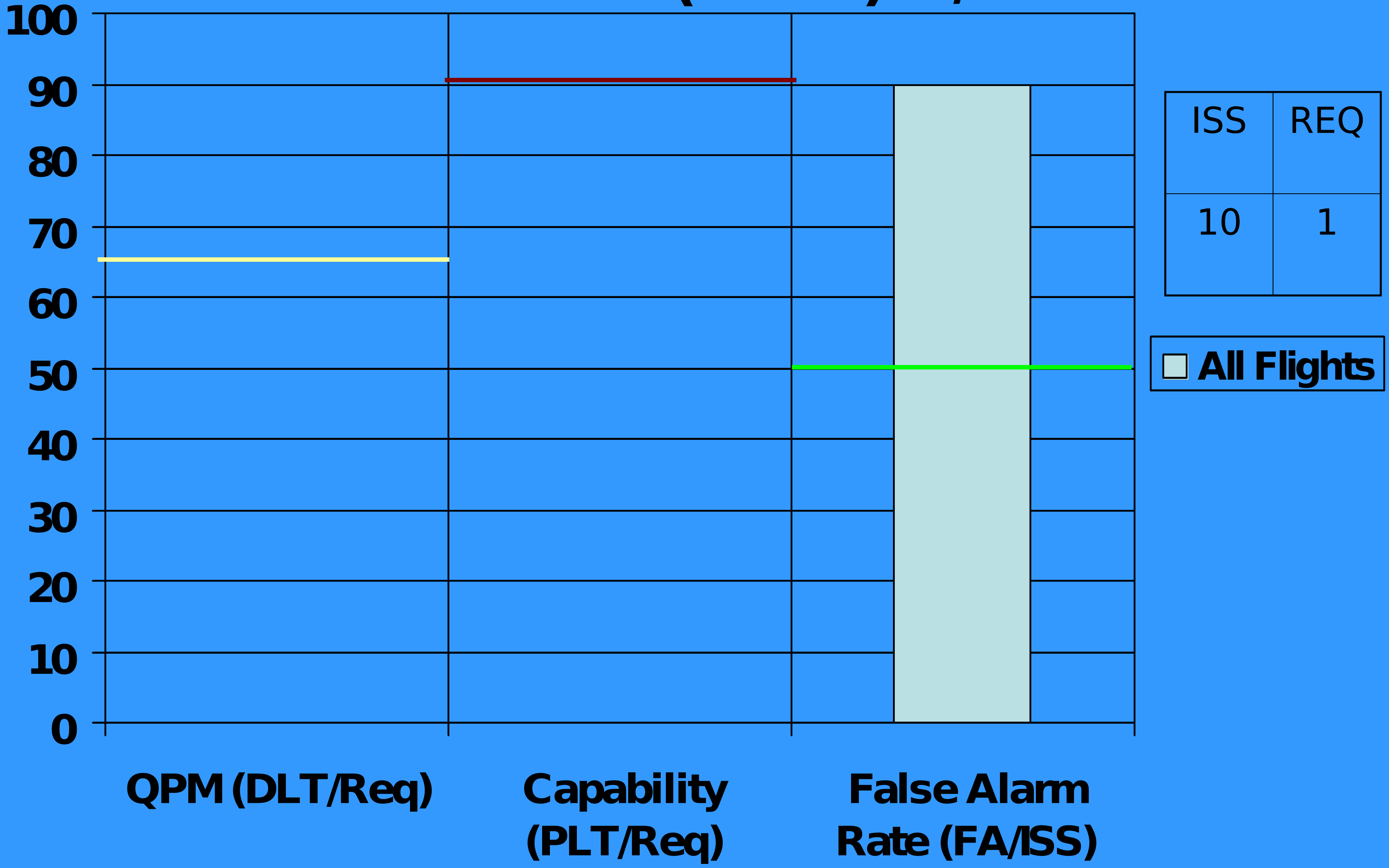
Columbus AFB (KCBM)



Flight	ISS	REQ
A	1	1
B	8	2
C	11	8
D	4	1
All	26	13

ACC GOAL: ≥ 65% ***ACC GOAL: ≥ 90%*** ***ACC GOAL: ≤ 50%***

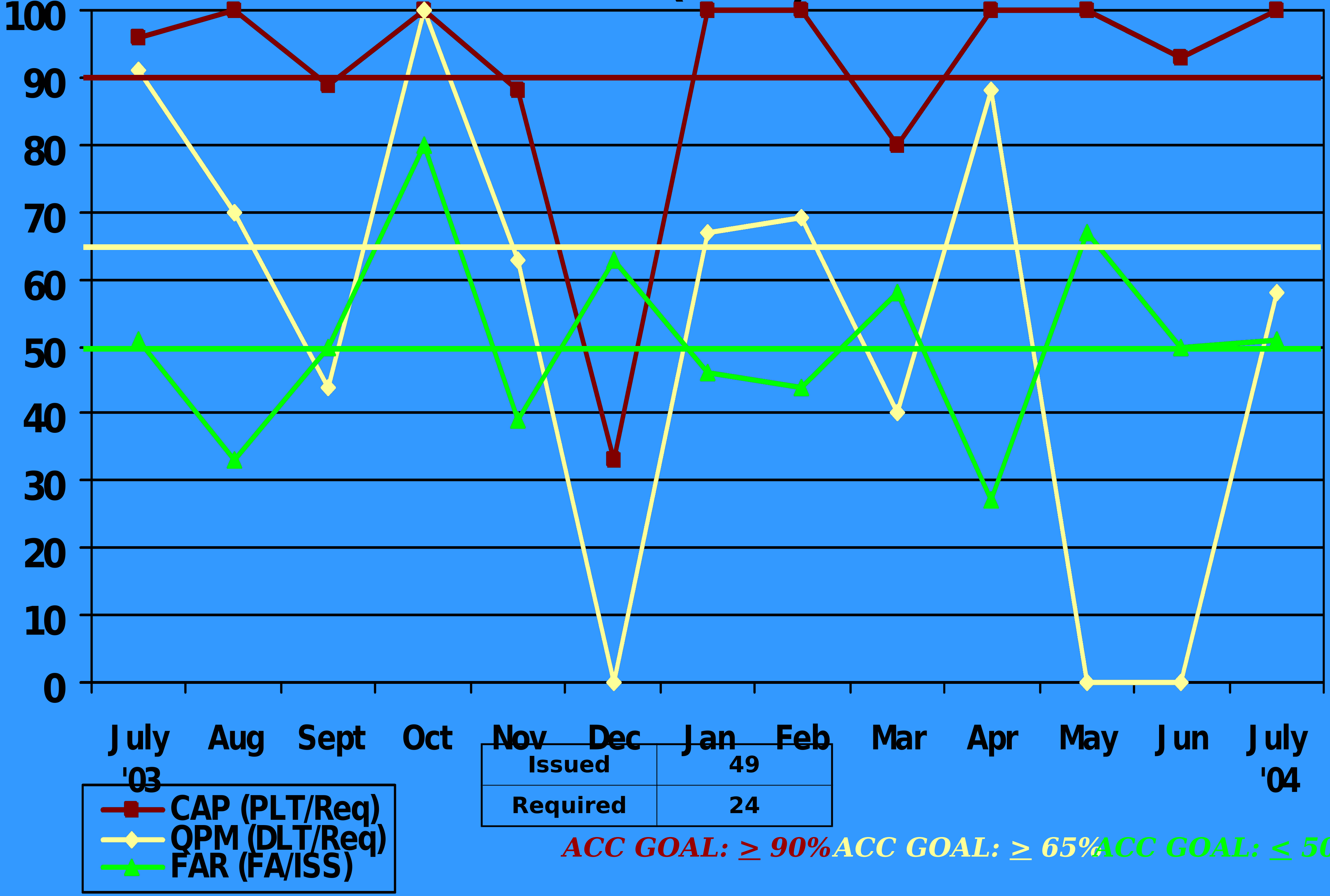
Columbus AFB (KCBM) W/O LTG



ISS	REQ
10	1

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

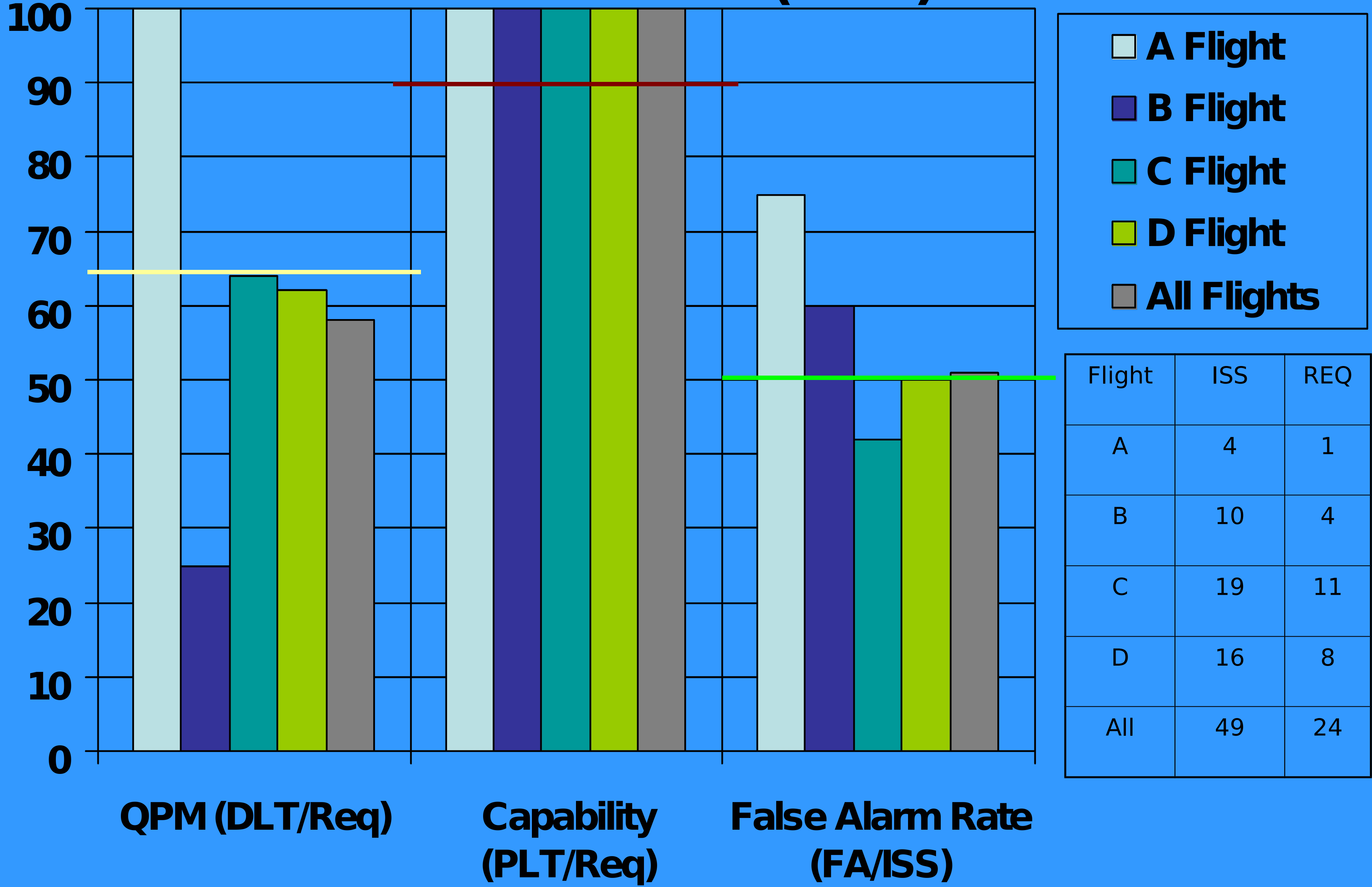
Keesler AFB (KBIX) Trend



Issued	49
Required	24

ACC GOAL: ≥ 90% *ACC GOAL: ≥ 65%* *ACC GOAL: ≤ 50*

Keesler AFB (KBIX)

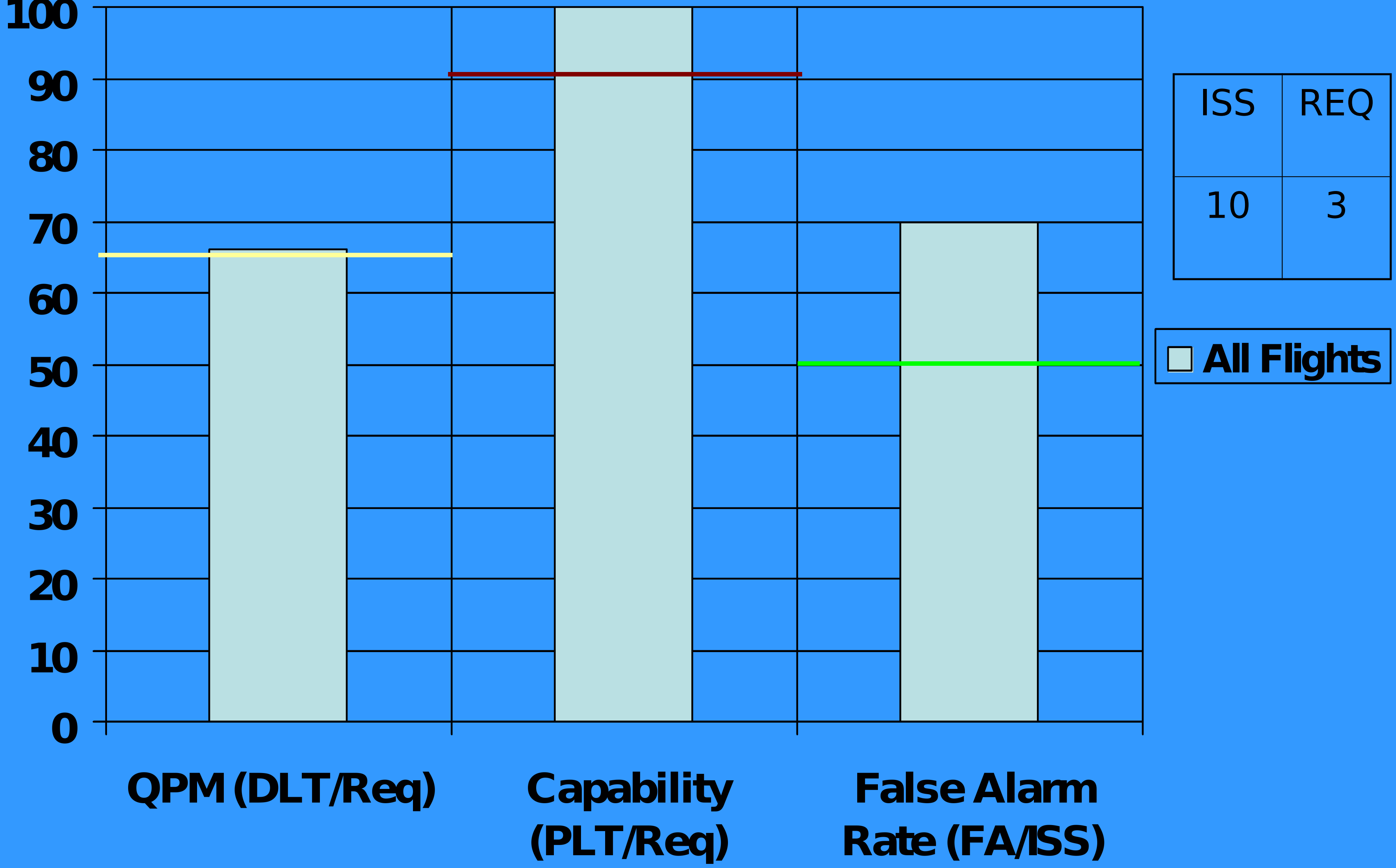


Flight	ISS	REQ
A	4	1
B	10	4
C	19	11
D	16	8
All	49	24

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

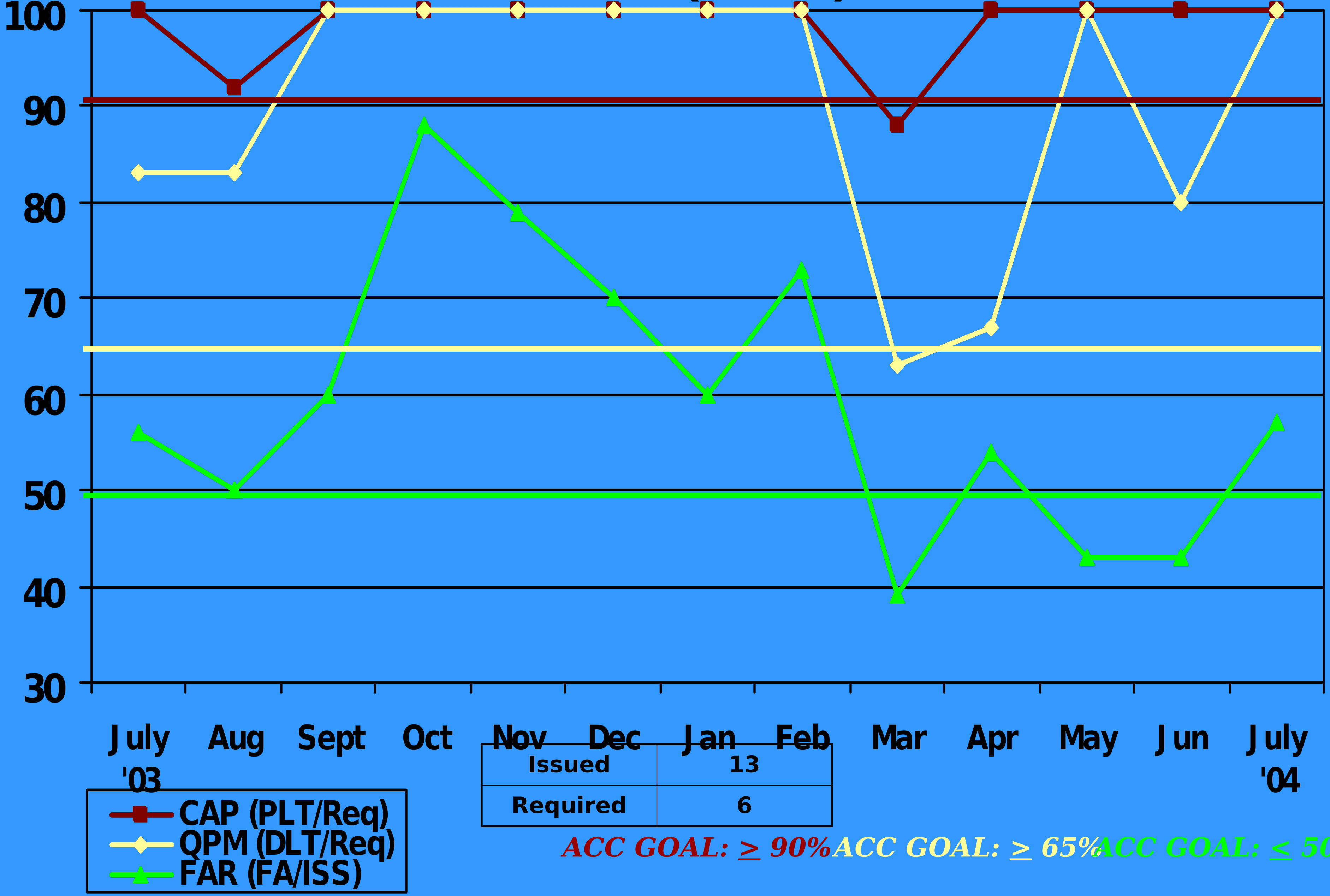
Keesler AFB (KBIX) W/O LTG

ISS	REQ
10	3



ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

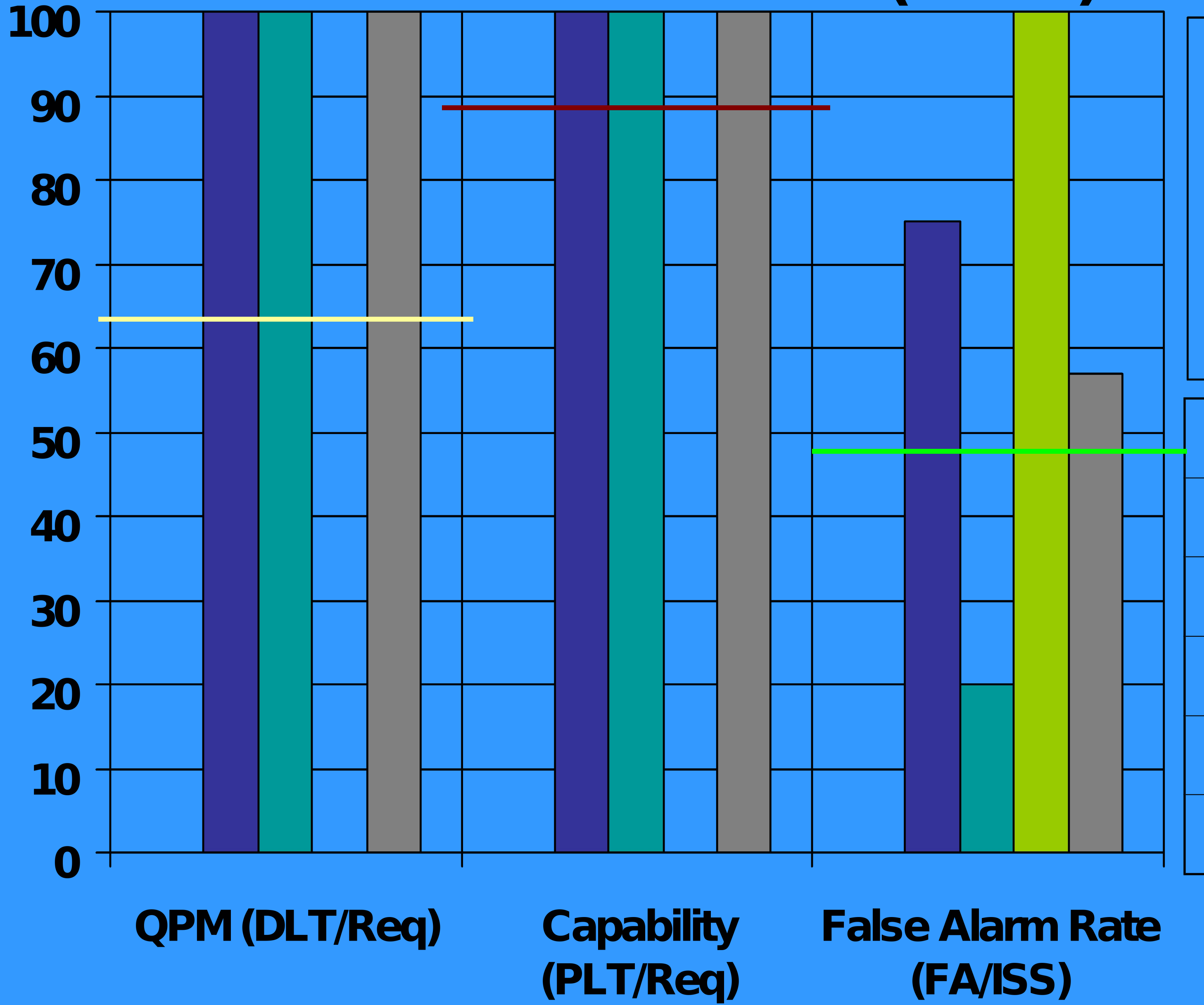
Barksdale AFB (KBAD) Trend



Issued	13
Required	6

ACC GOAL: ≥ 90% *ACC GOAL: ≥ 65%* *ACC GOAL: ≤ 50*

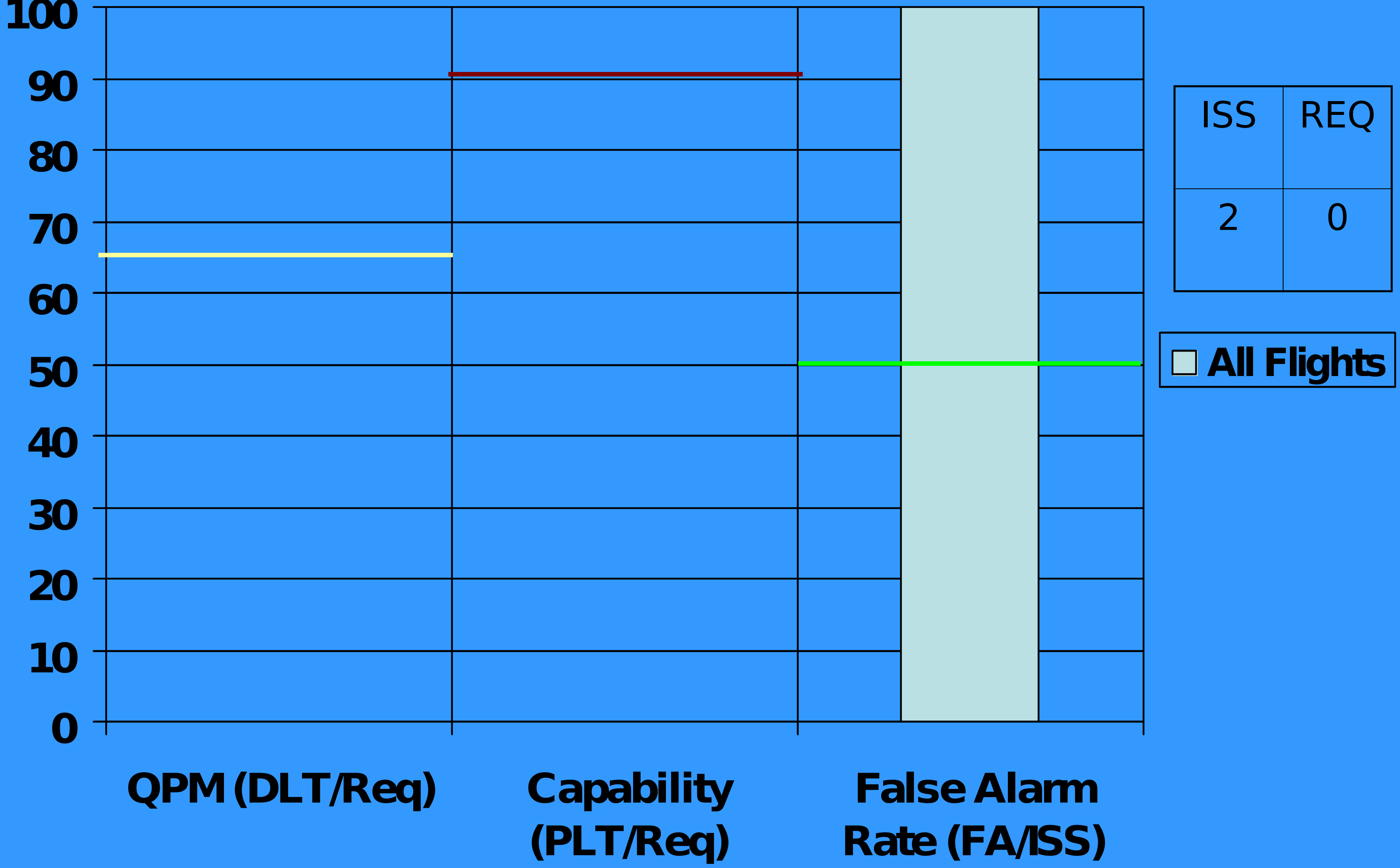
Barksdale AFB (KBAD)



Flight	ISS	REQ
A	0	0
B	8	2
C	5	4
D	1	0
All	13	6

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

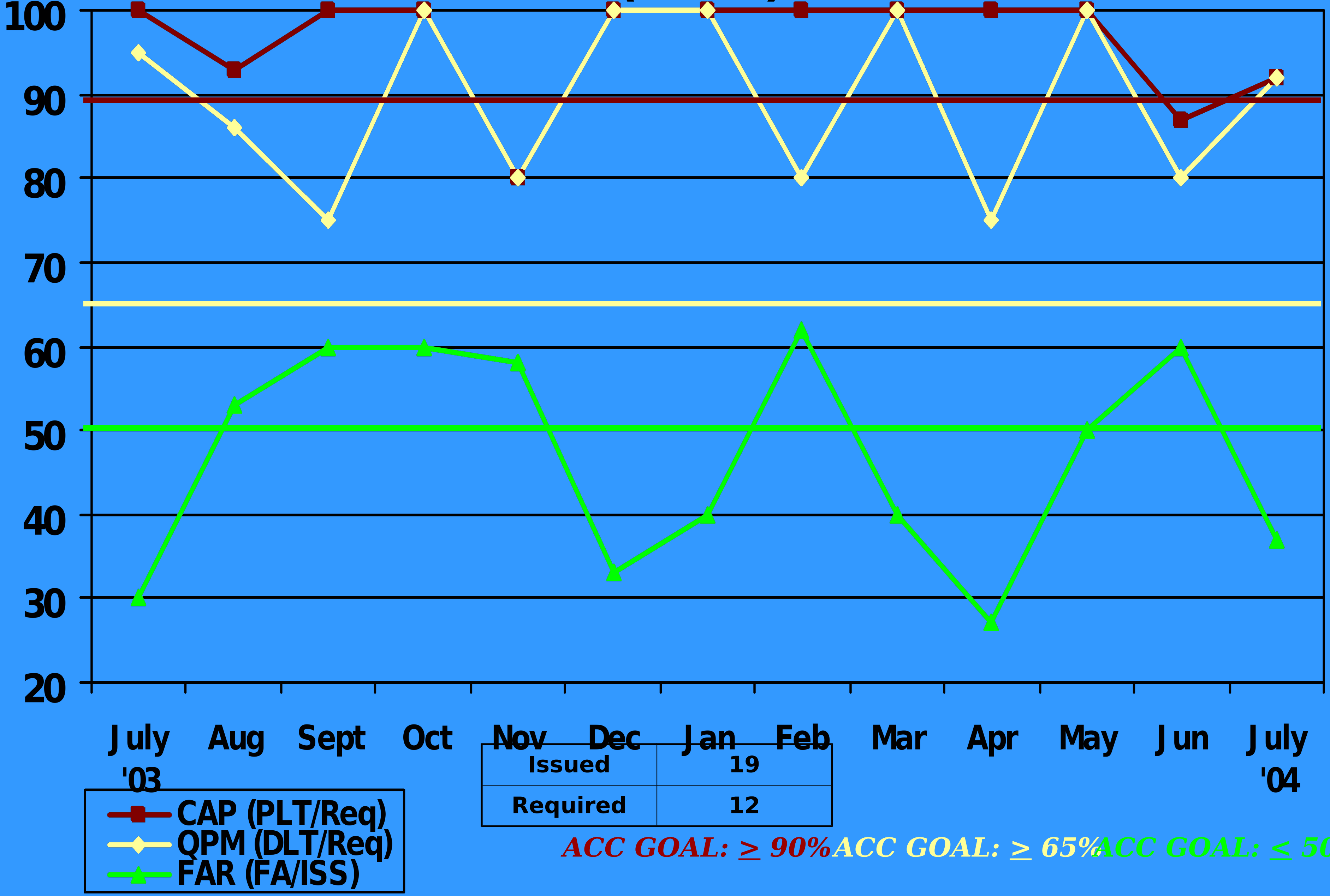
Barksdale AFB (KBAD) W/O LTG



ISS	REQ
2	0

ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

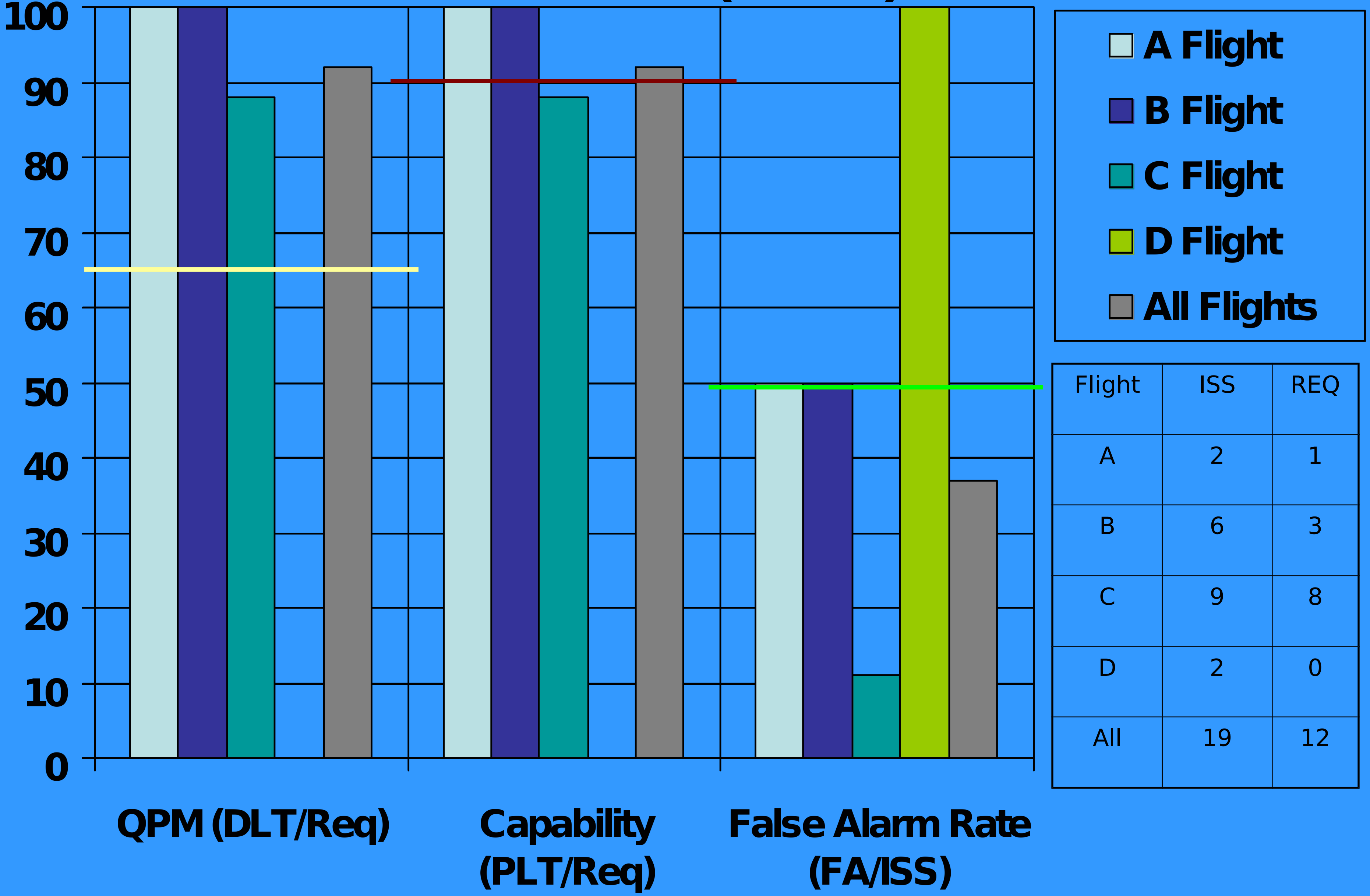
Fort Polk (KPOE) Trend



Issued	19
Required	12

ACC GOAL: ≥ 90% ACC GOAL: ≥ 65% ACC GOAL: ≤ 50

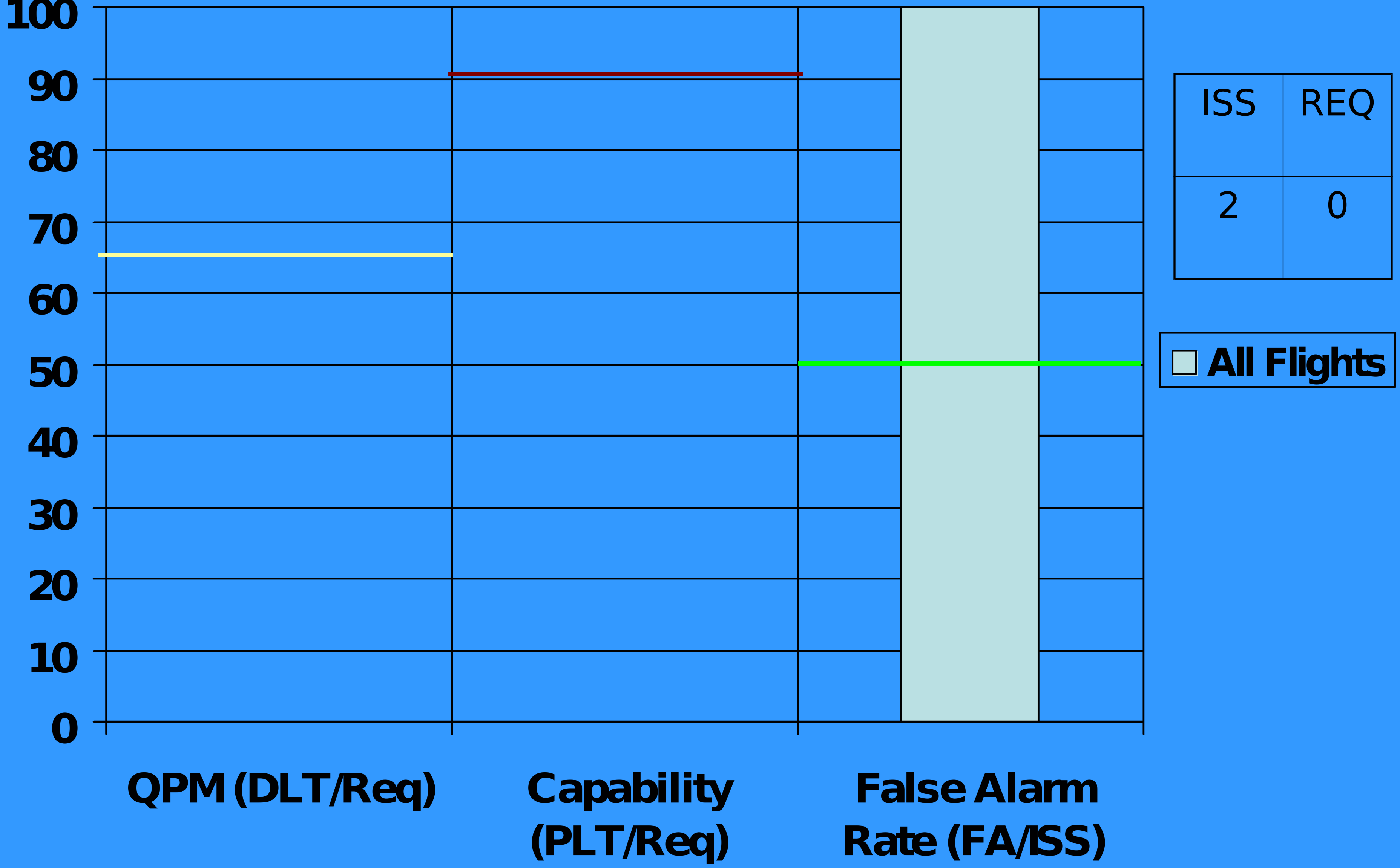
Fort Polk (KPOE)



Flight	ISS	REQ
A	2	1
B	6	3
C	9	8
D	2	0
All	19	12

ACC GOAL: ≥ 65% ***ACC GOAL: ≥ 90%*** ***ACC GOAL: ≤ 50%***

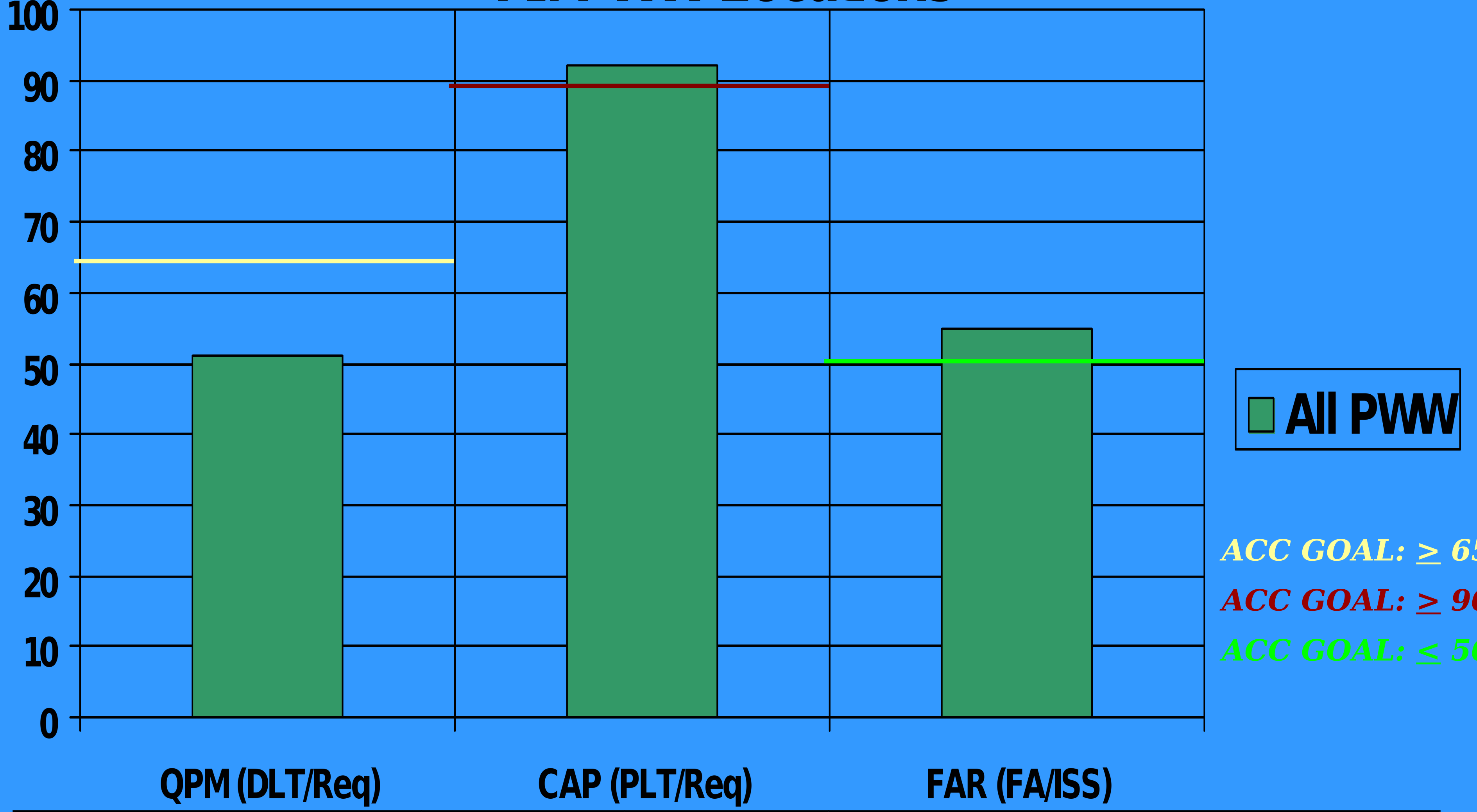
Fort Polk (KPOE) W/O LTG



ISS	REQ
2	0

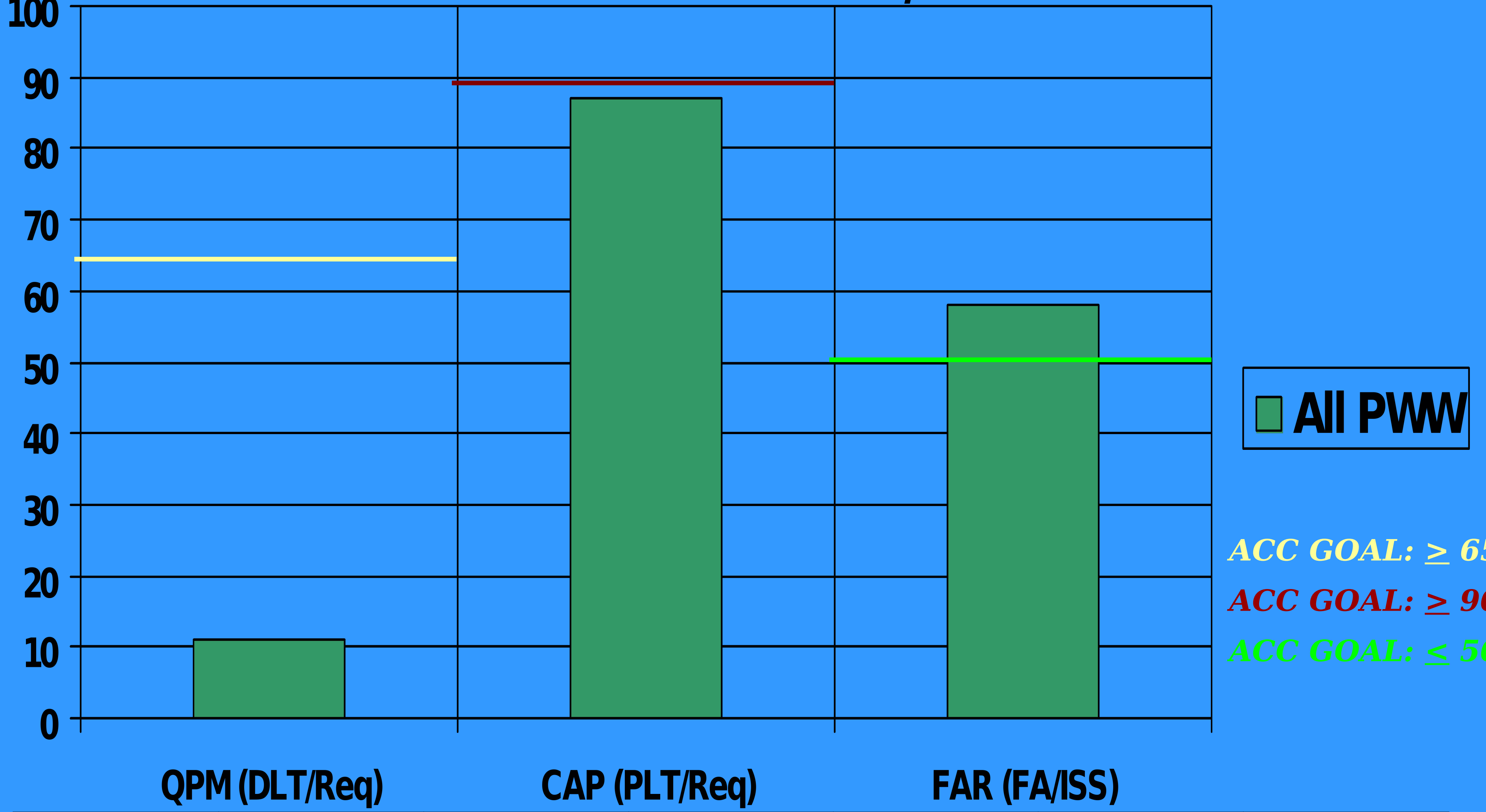
ACC GOAL: ≥ 65% *ACC GOAL: ≥ 90%* *ACC GOAL: ≤ 50%*

All PWW Locations



	Issued	Required	DLT	PLT	FA	ATF
All PWW	788	358	181	328	430	11

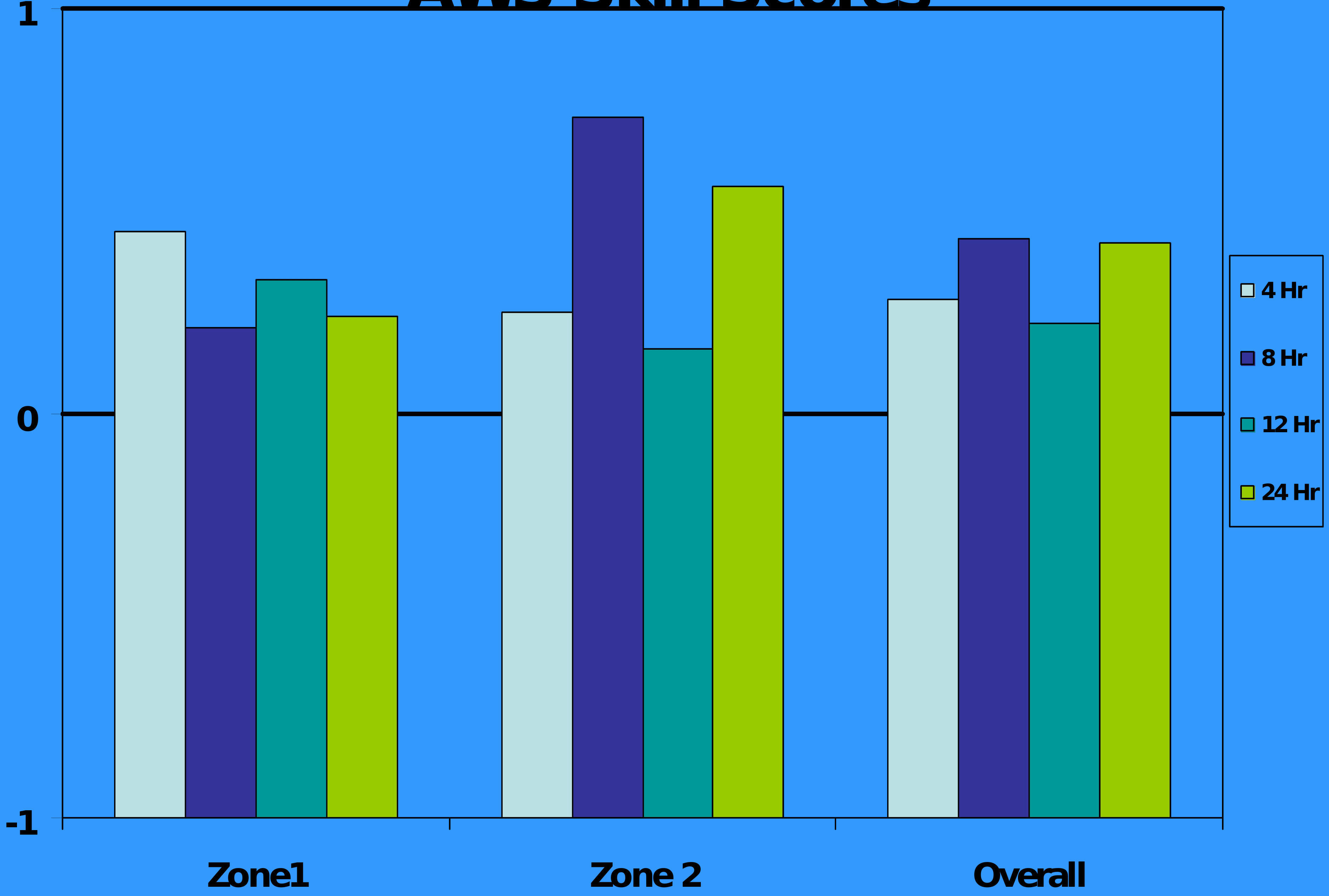
All PWW Locations W/O LTG



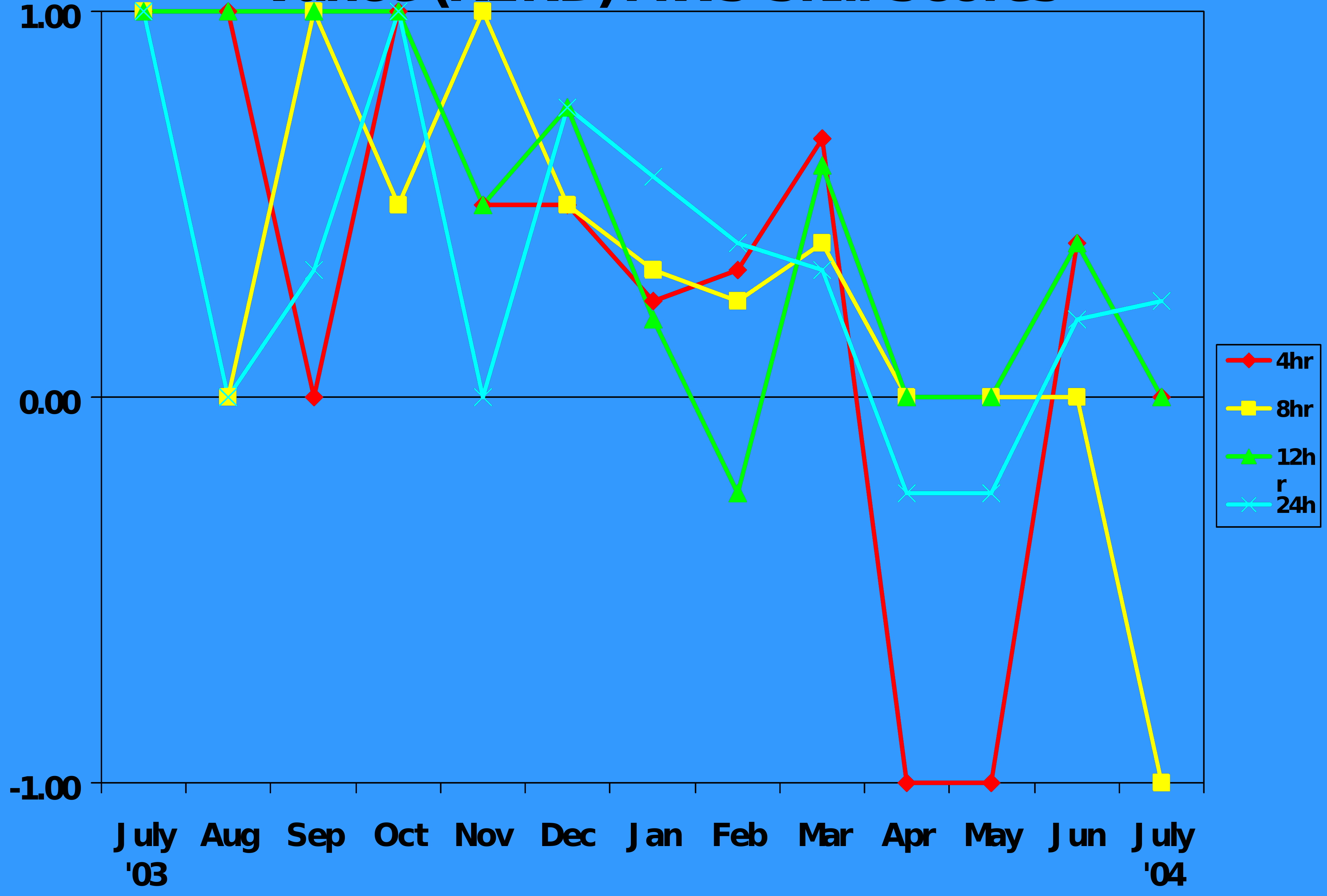
	Issued	Required	DLT	PLT	FA	ATF
All PWW	574	241	26	210	333	5

TAFVER

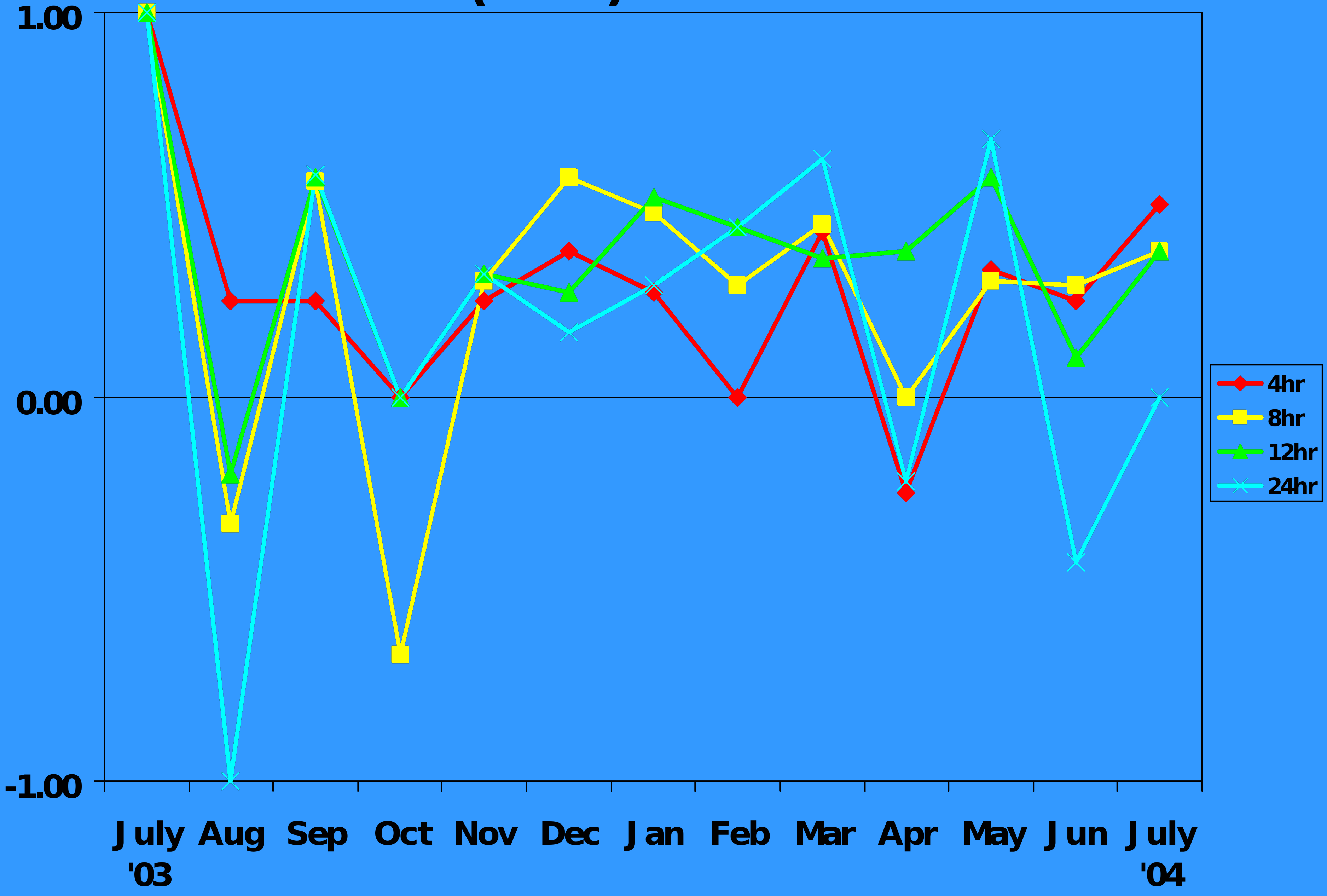
AWS Skill Scores



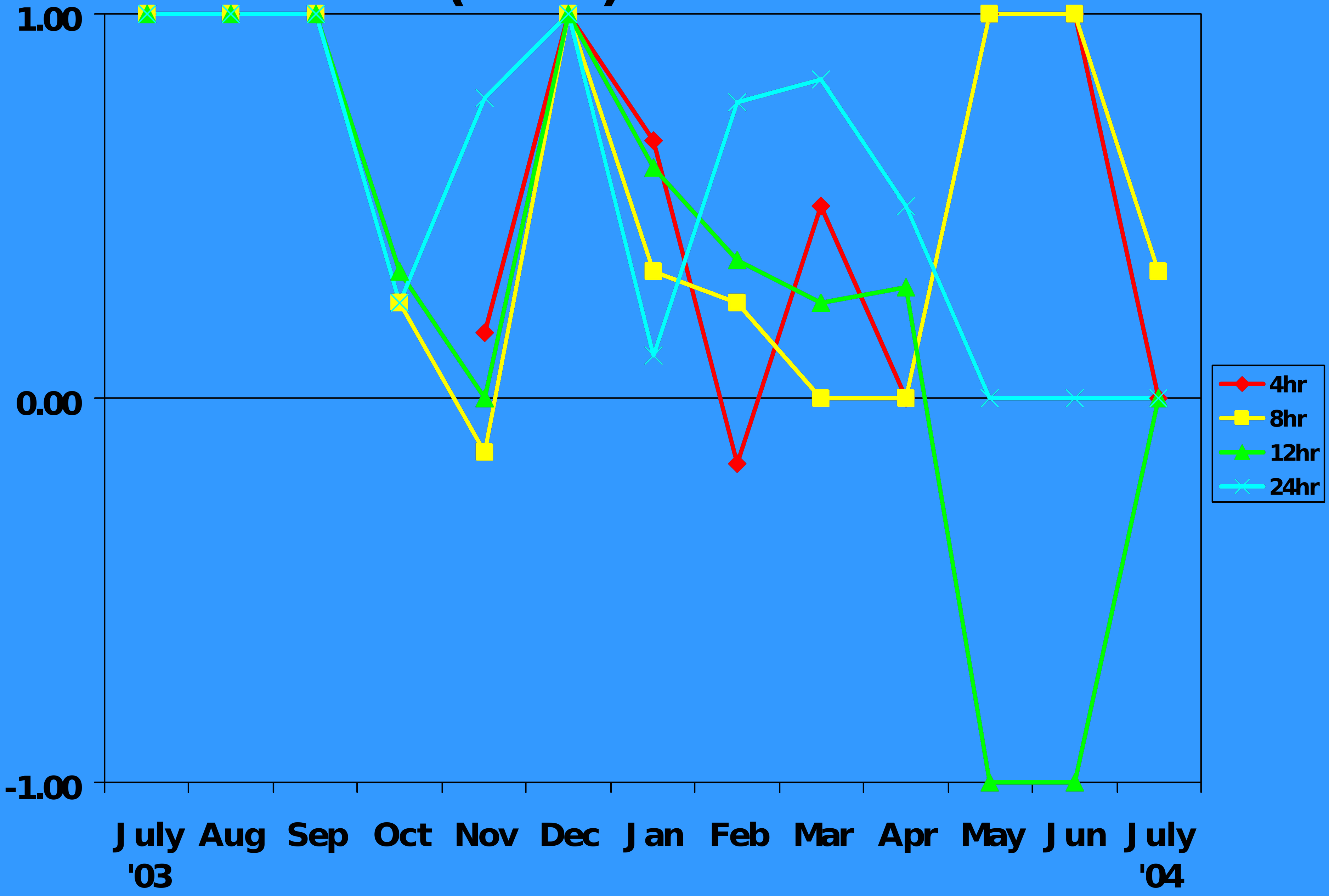
Vance (KEND) AWS Skill Scores



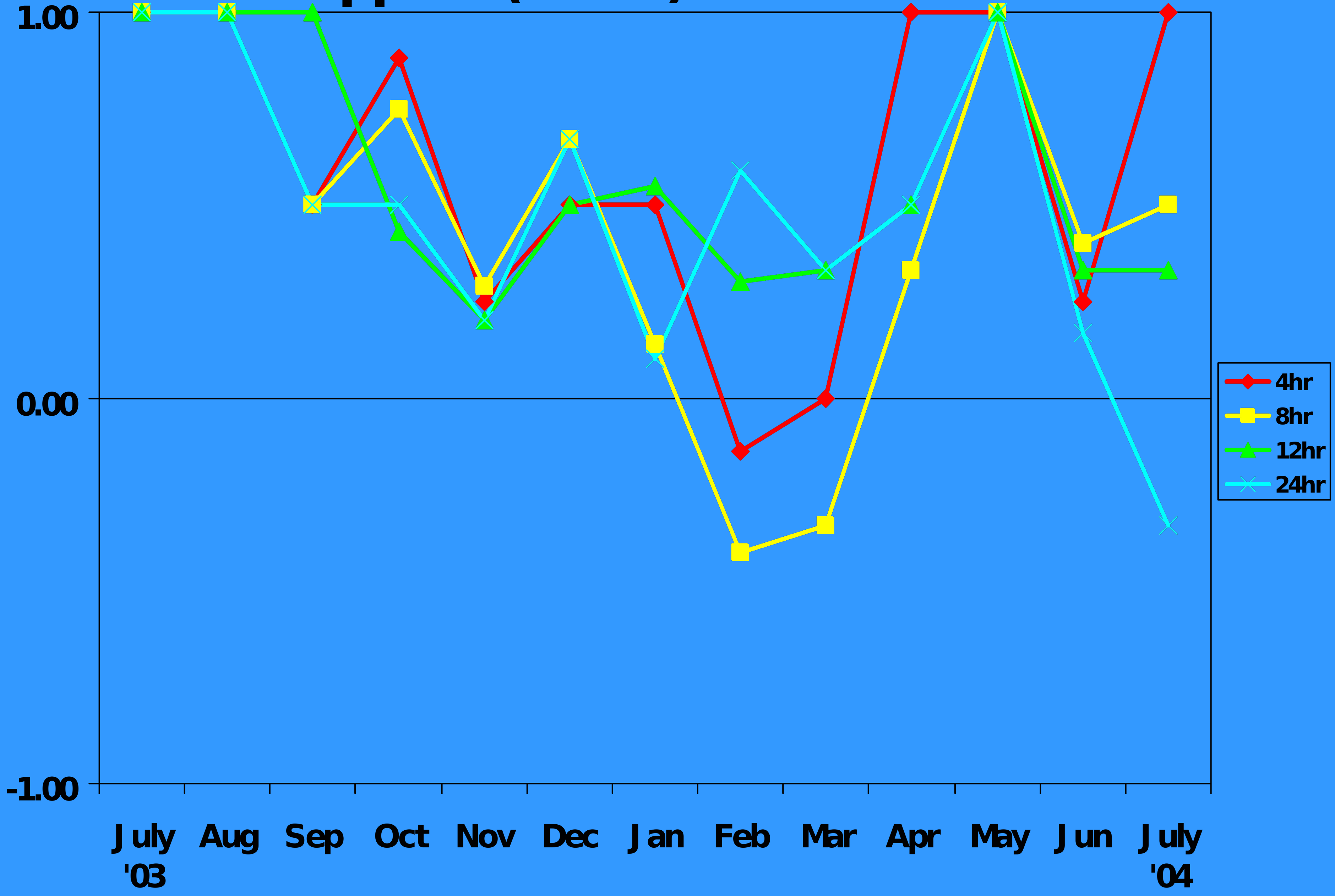
Tinker (KTIK) AWS Skill Score



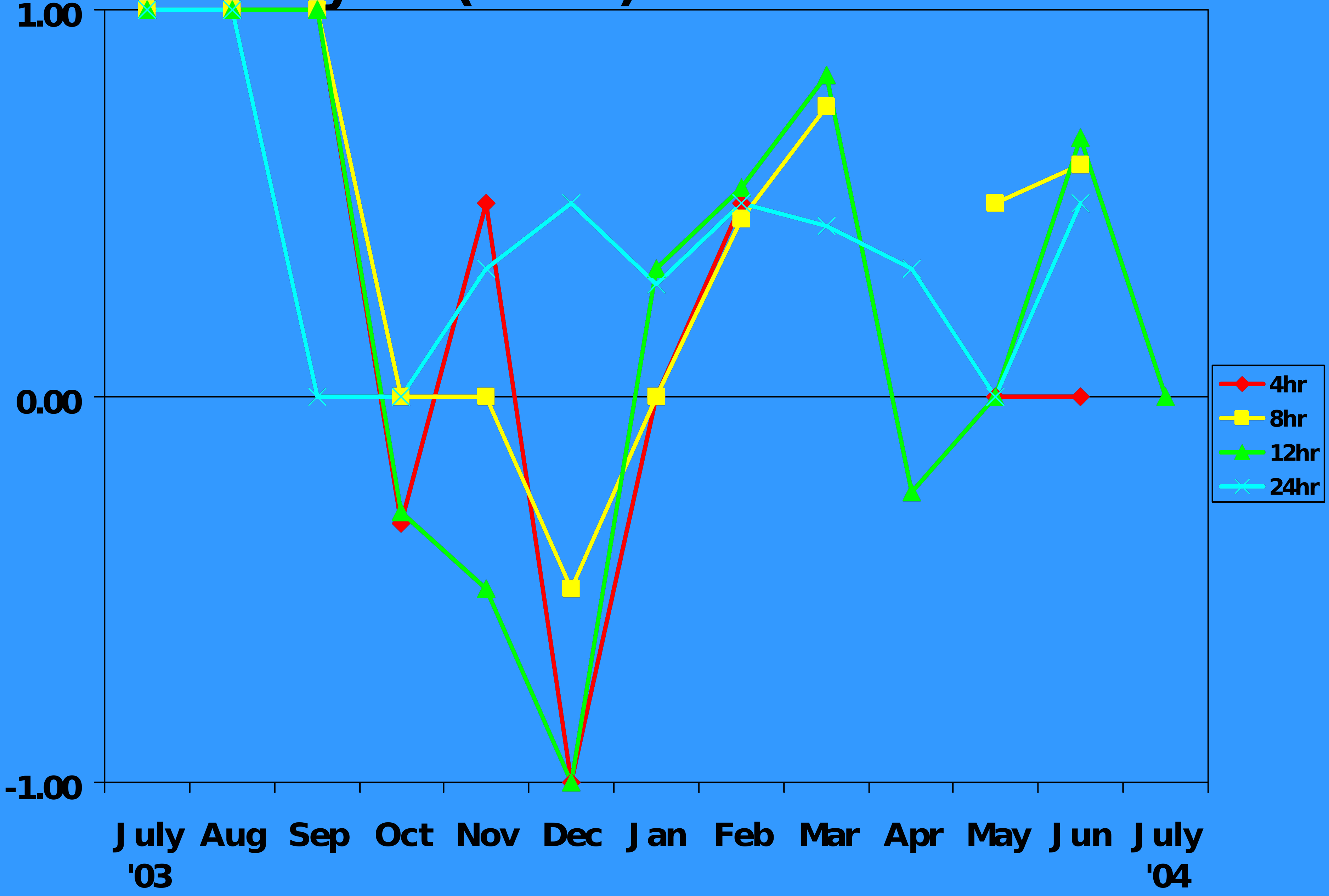
Altus (KLTS) AWS Skill Score



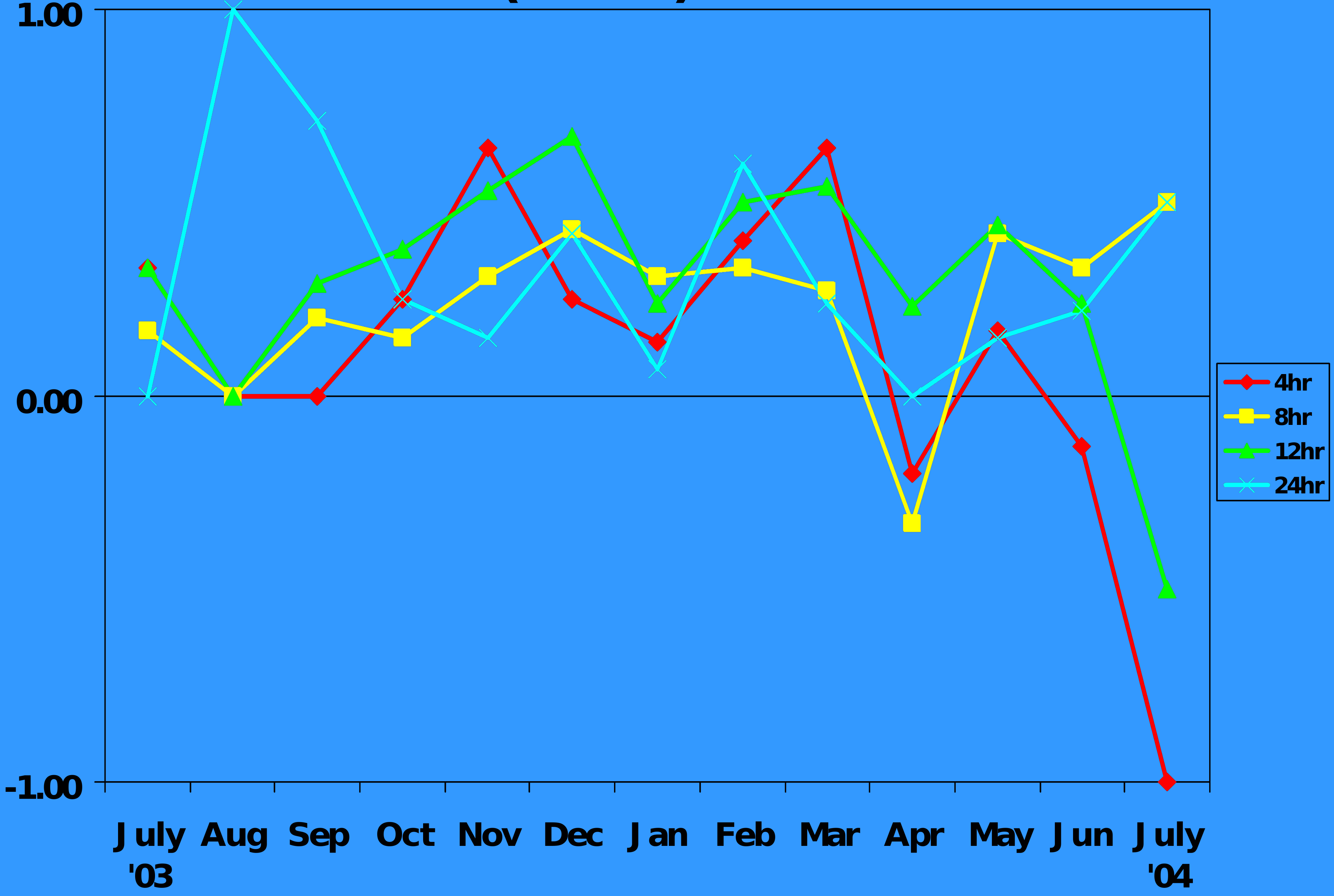
Sheppard (KSHP) AWS Skill Score



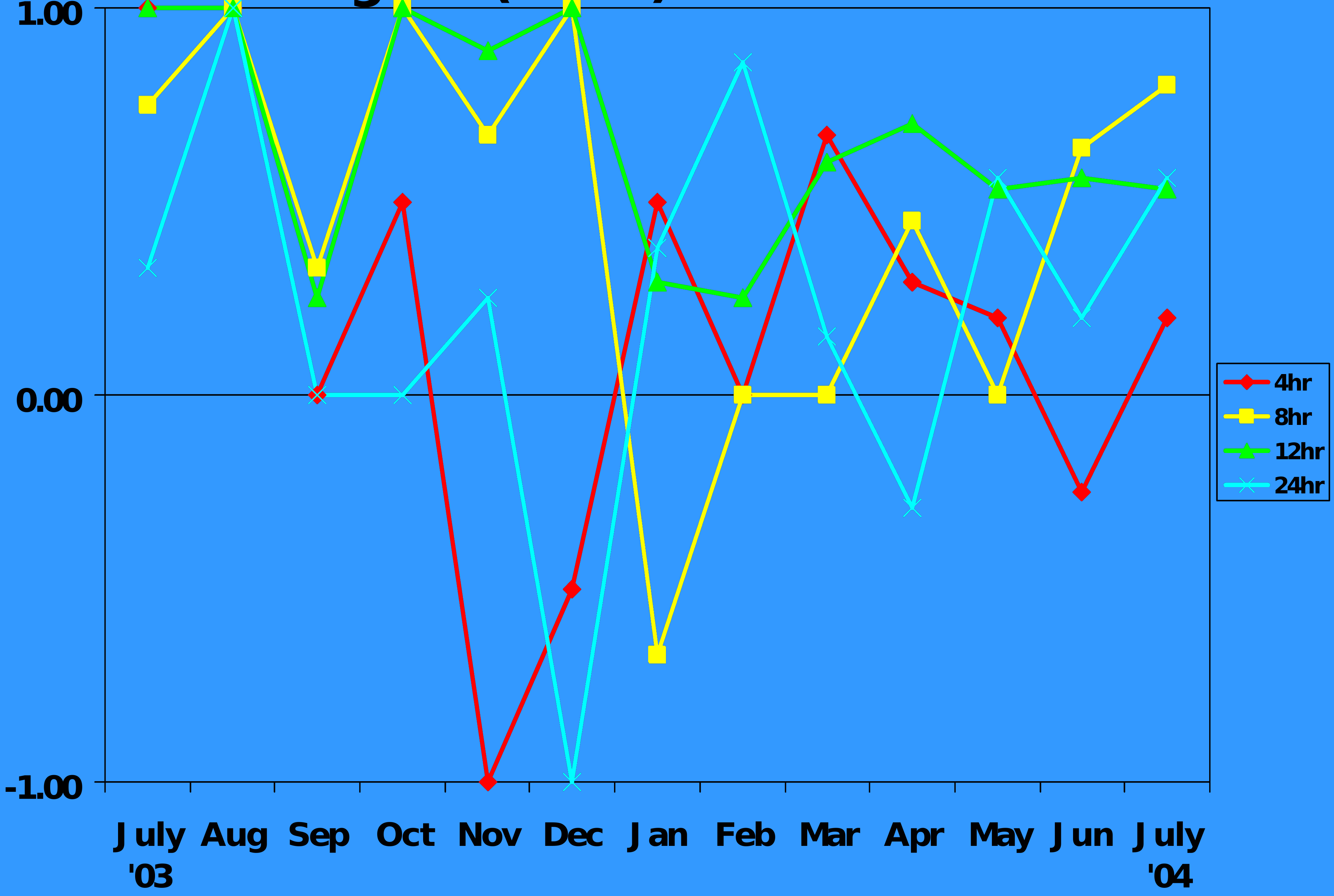
Dyess (KDYS) AWS Skill Score



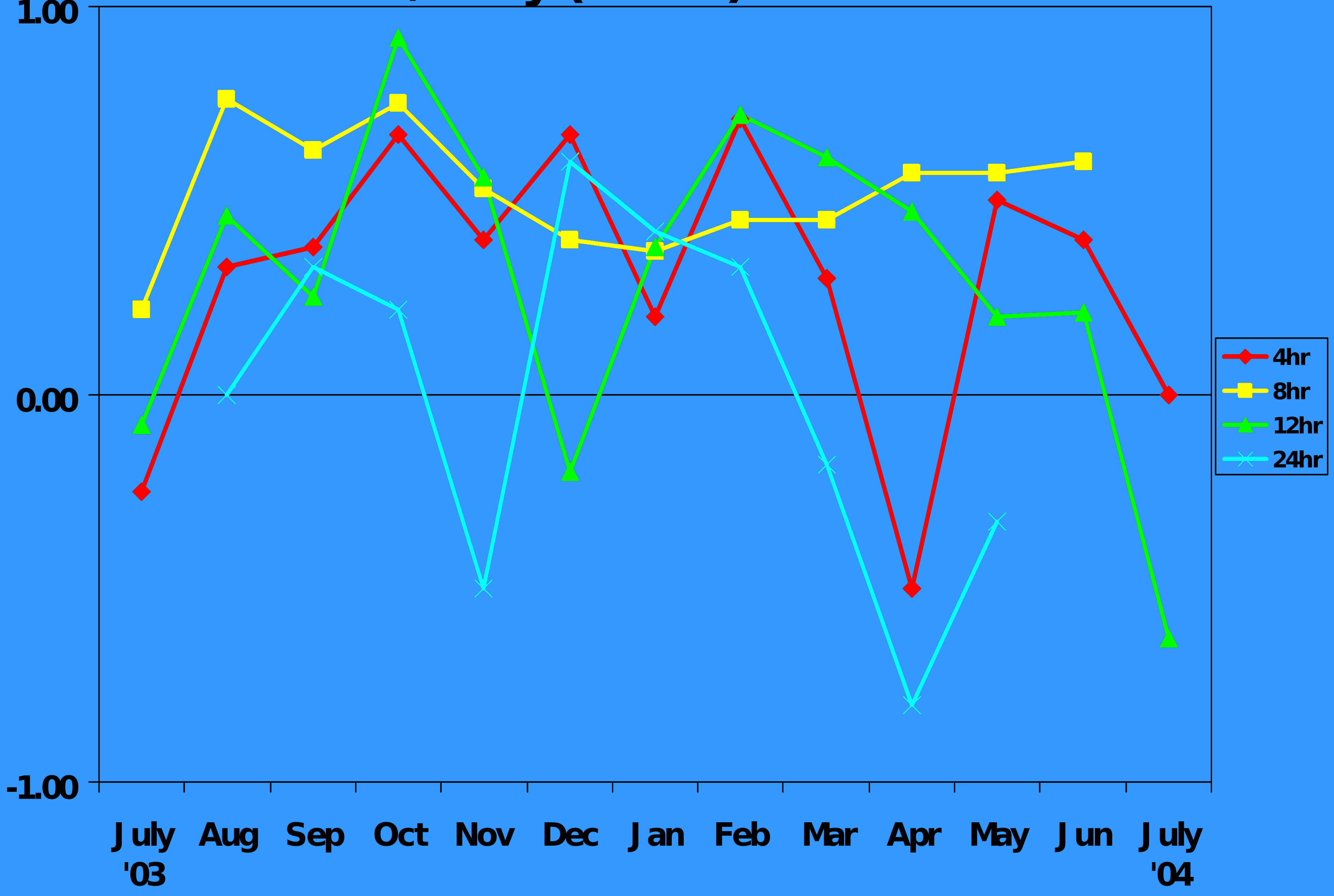
Fort Hood (KGRK) AWS Skill Score



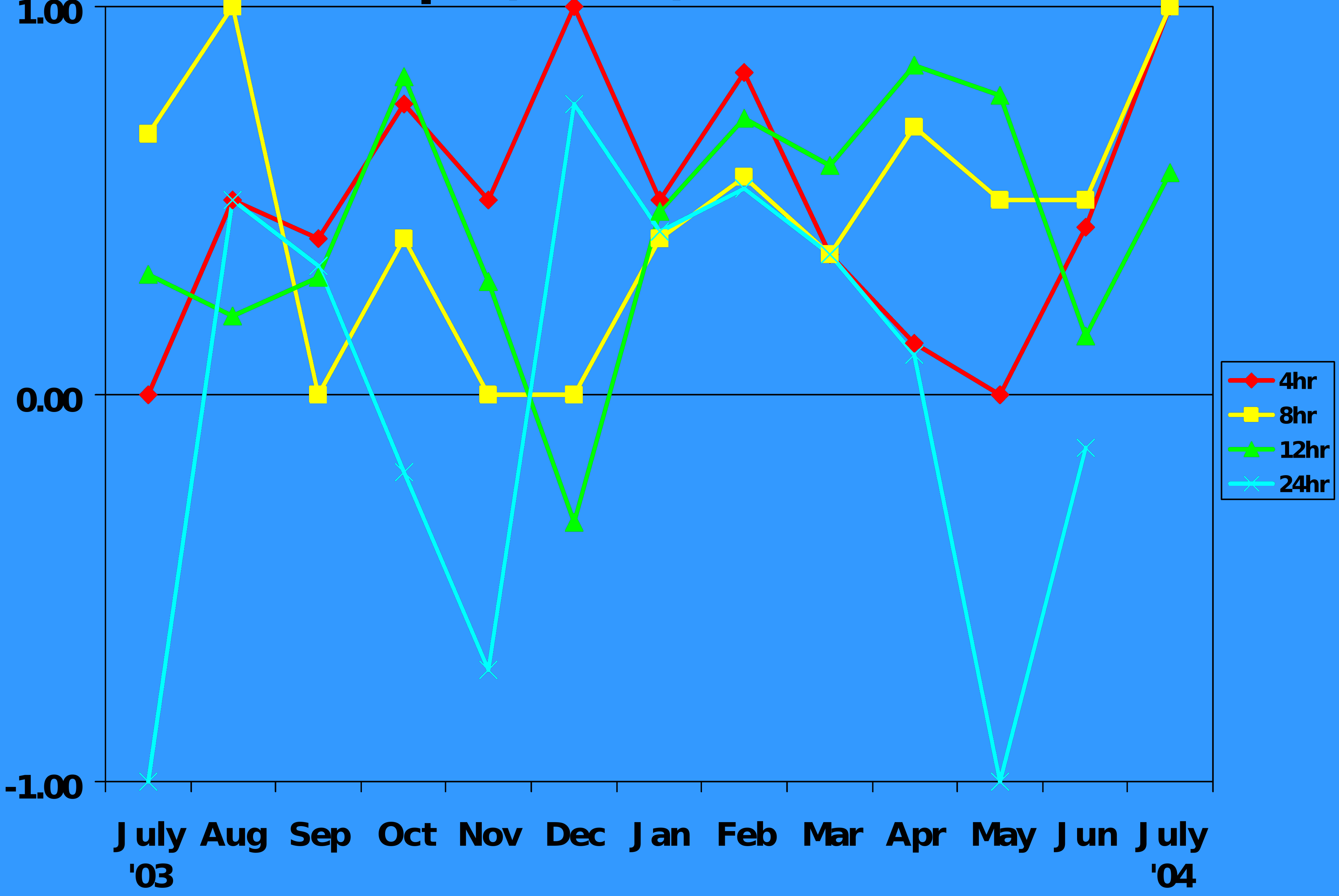
Laughlin (KDLF) AWS Skill Score



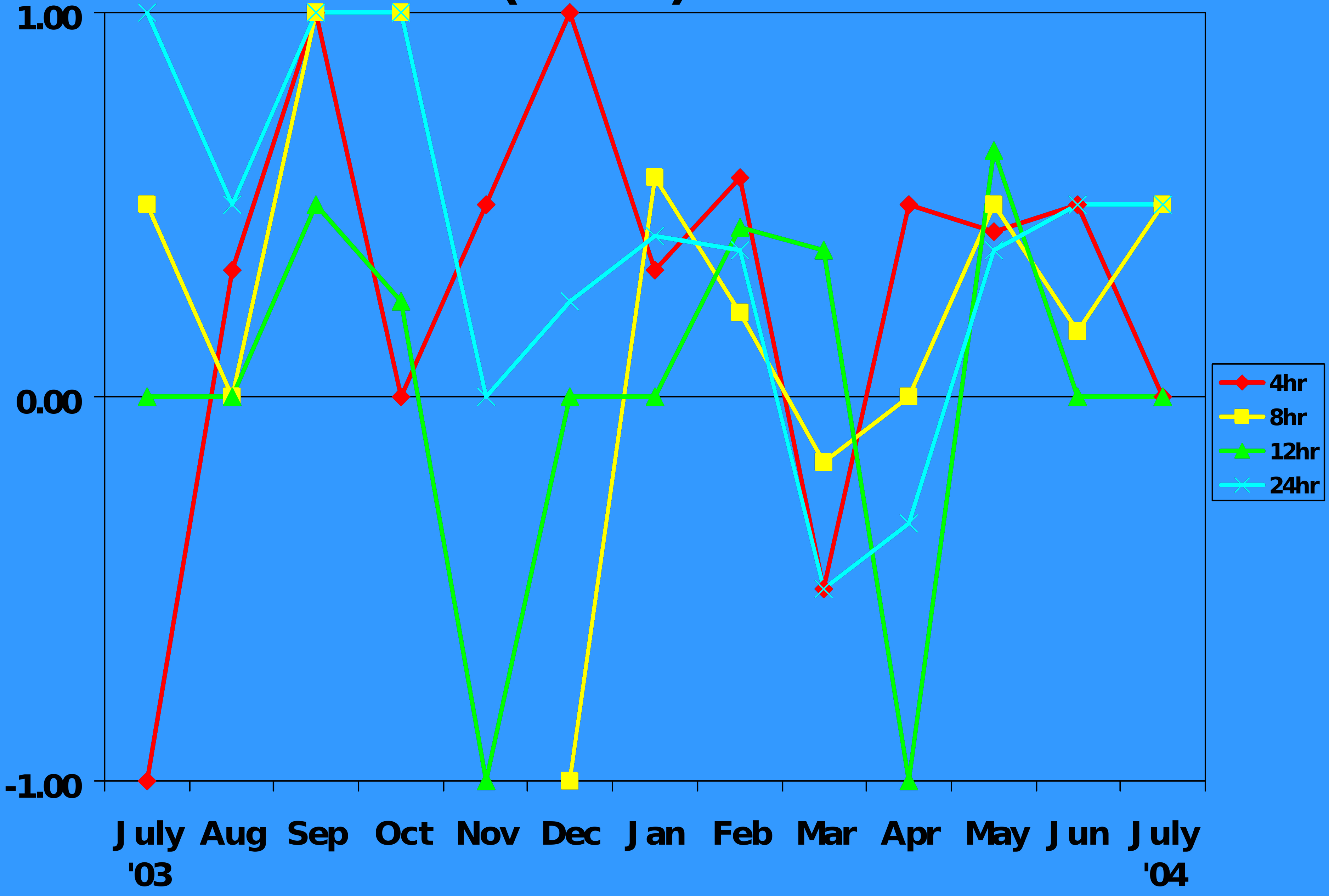
Lackland/Kelly (KSKF) AWS Skill Score



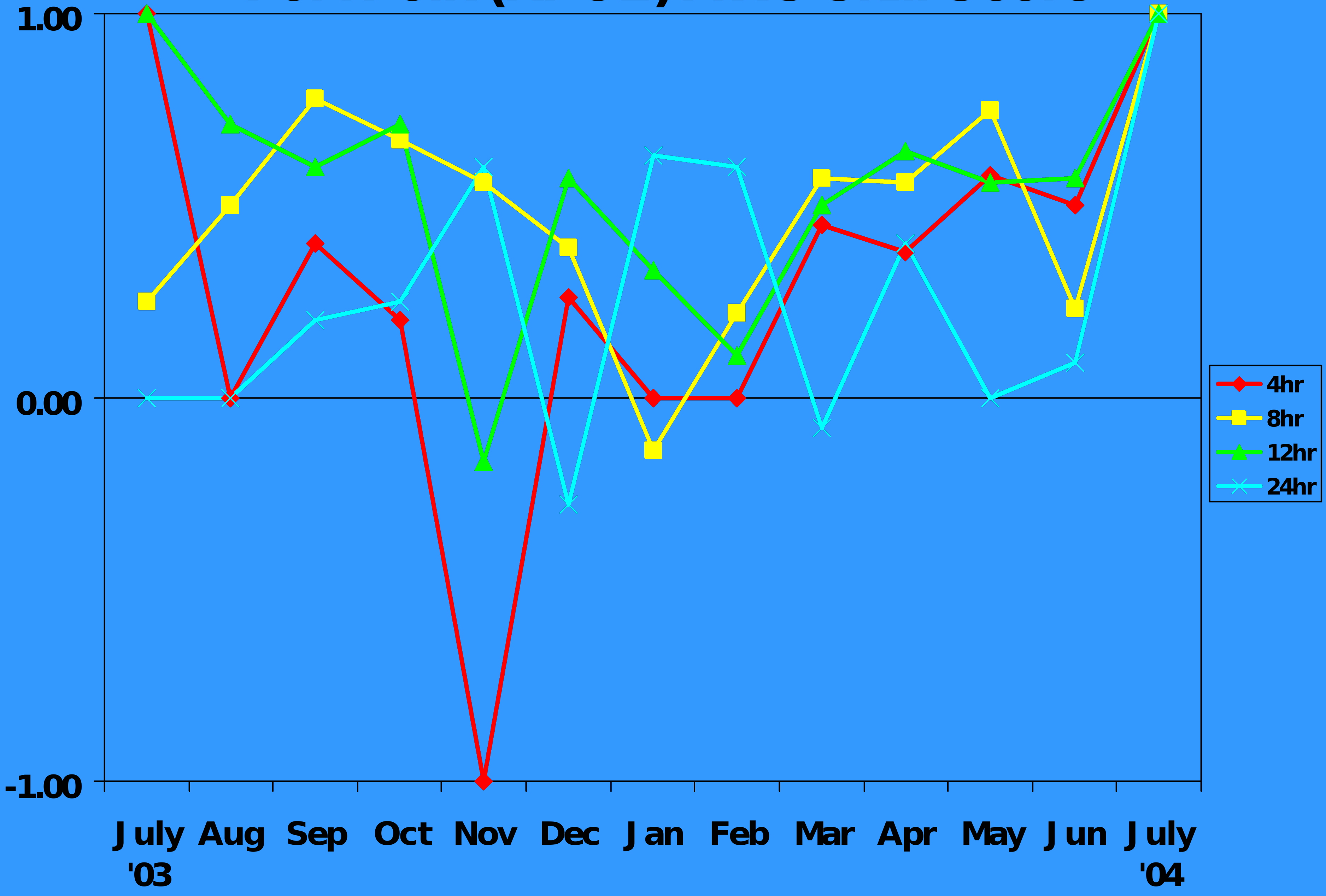
Randolph (KRND) AWS Skill Score



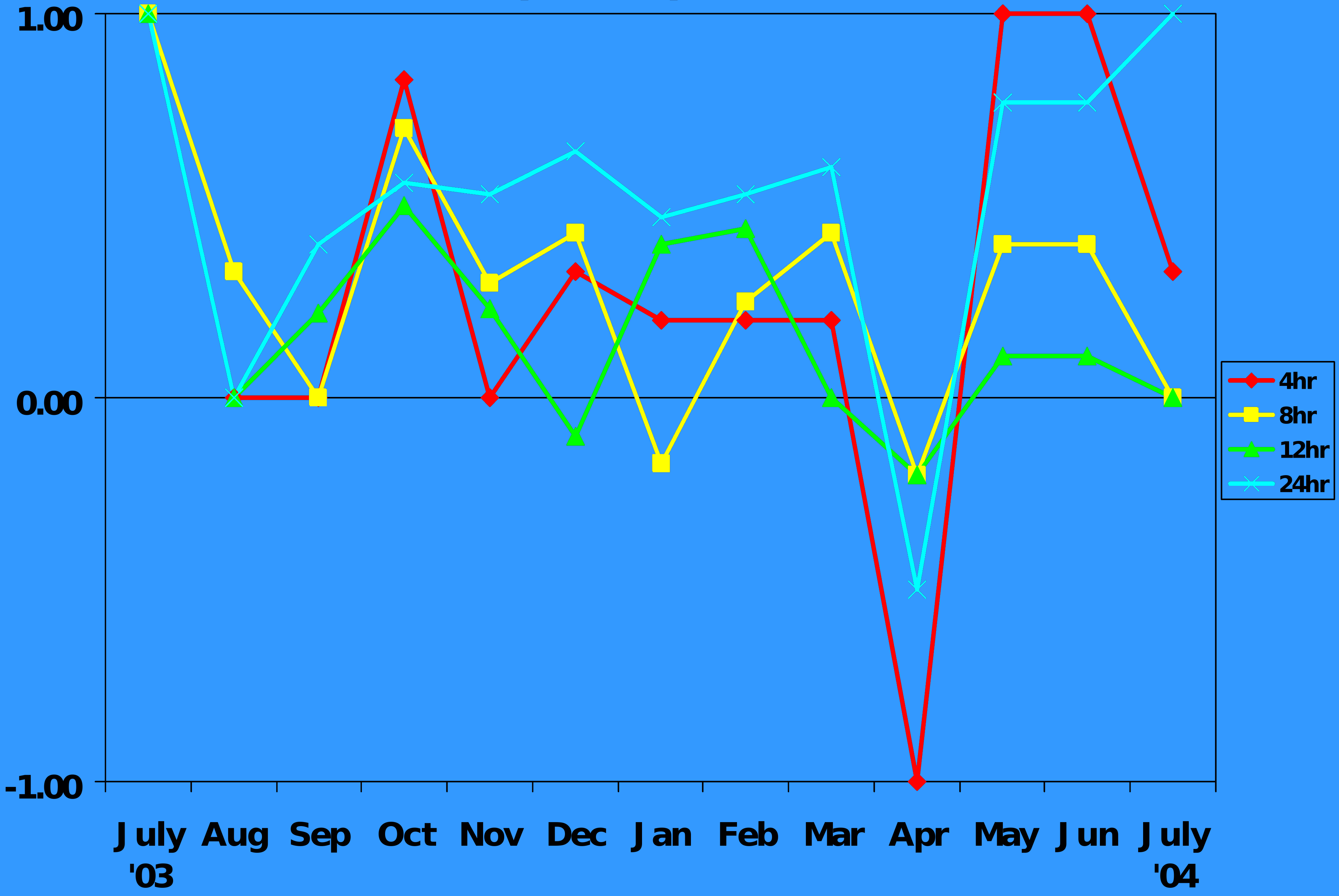
Barksdale (KBAD) AWS Skill Score



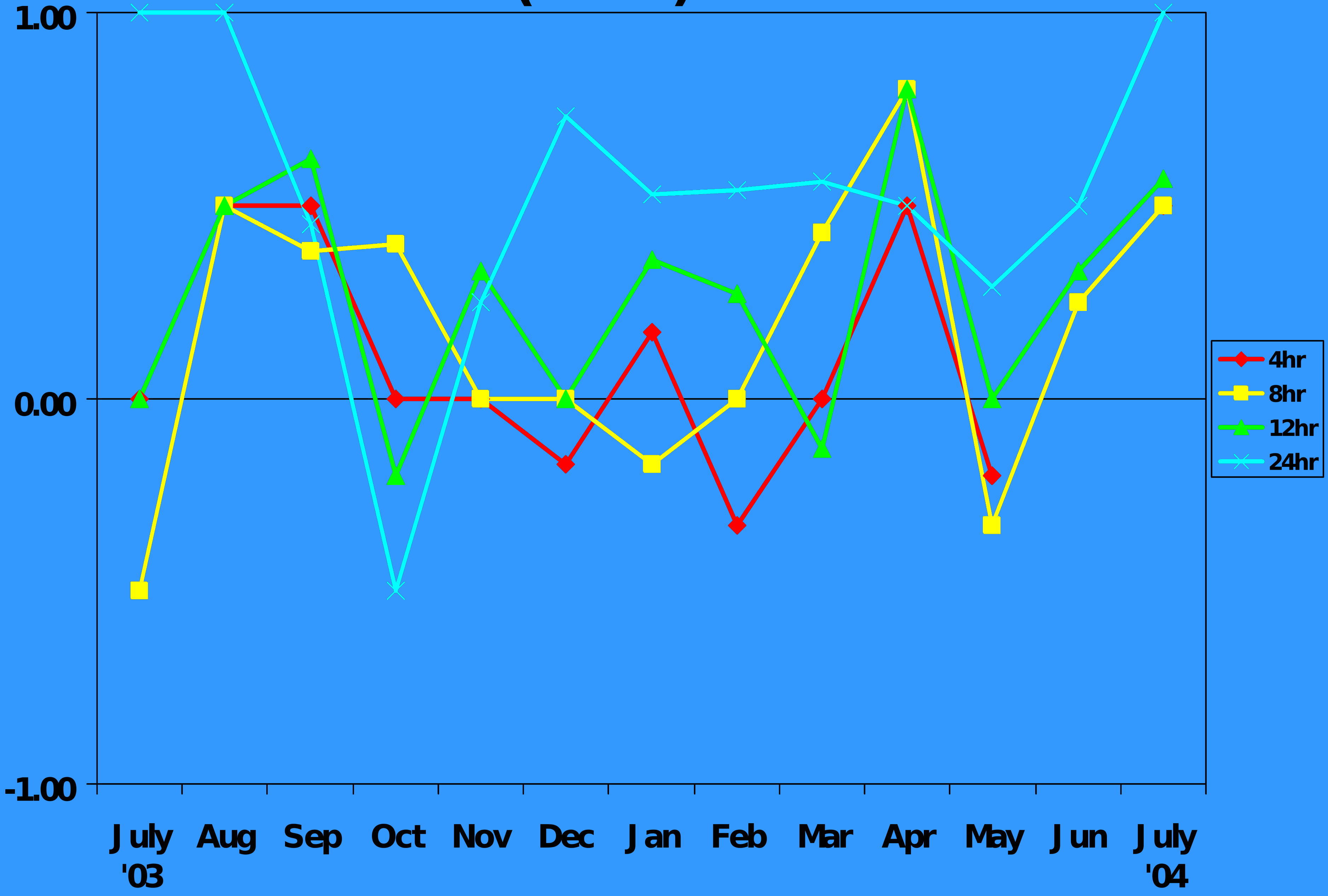
Fort Polk (KPOE) AWS Skill Score



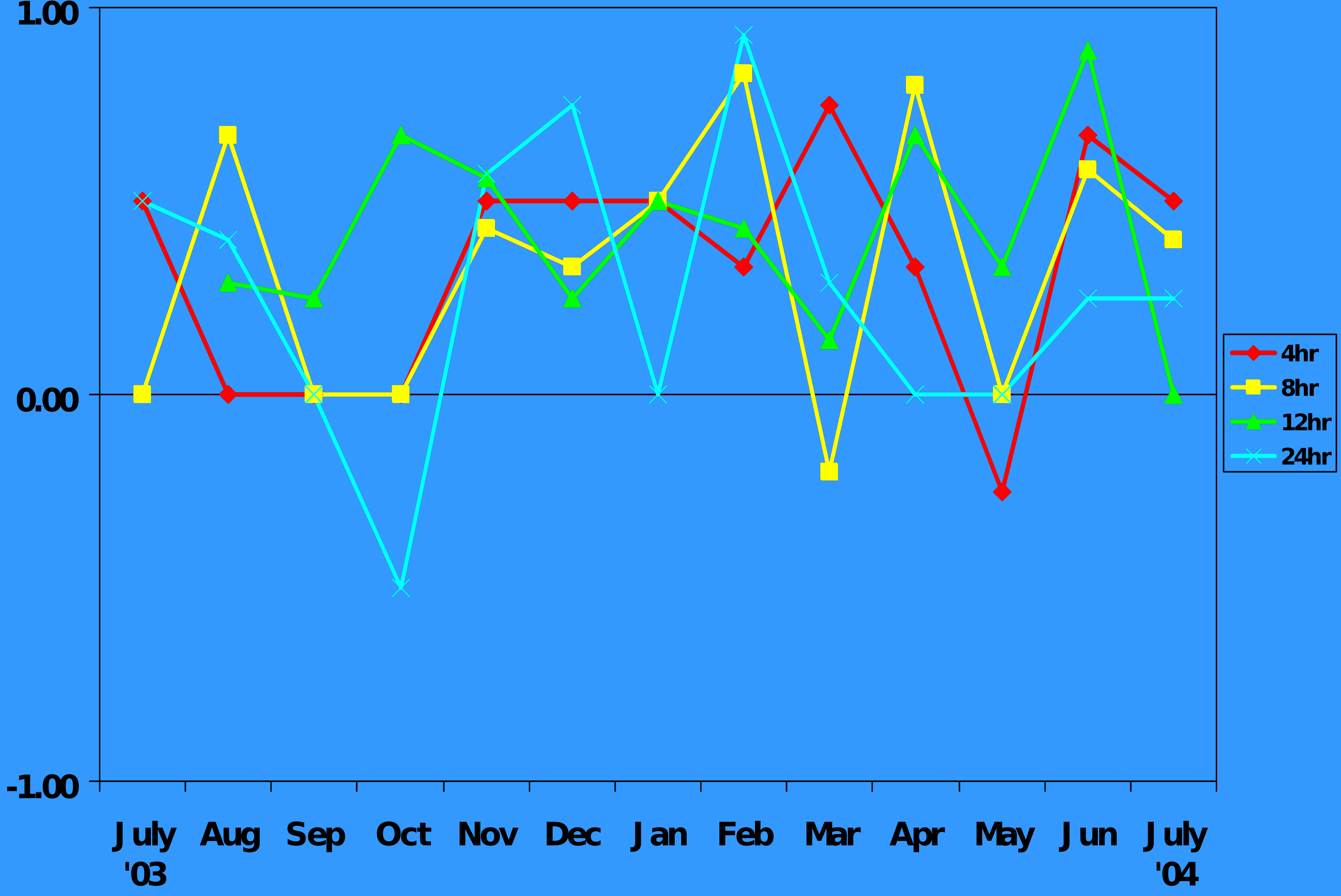
Whiteman (KSZL) AWS Skill Score



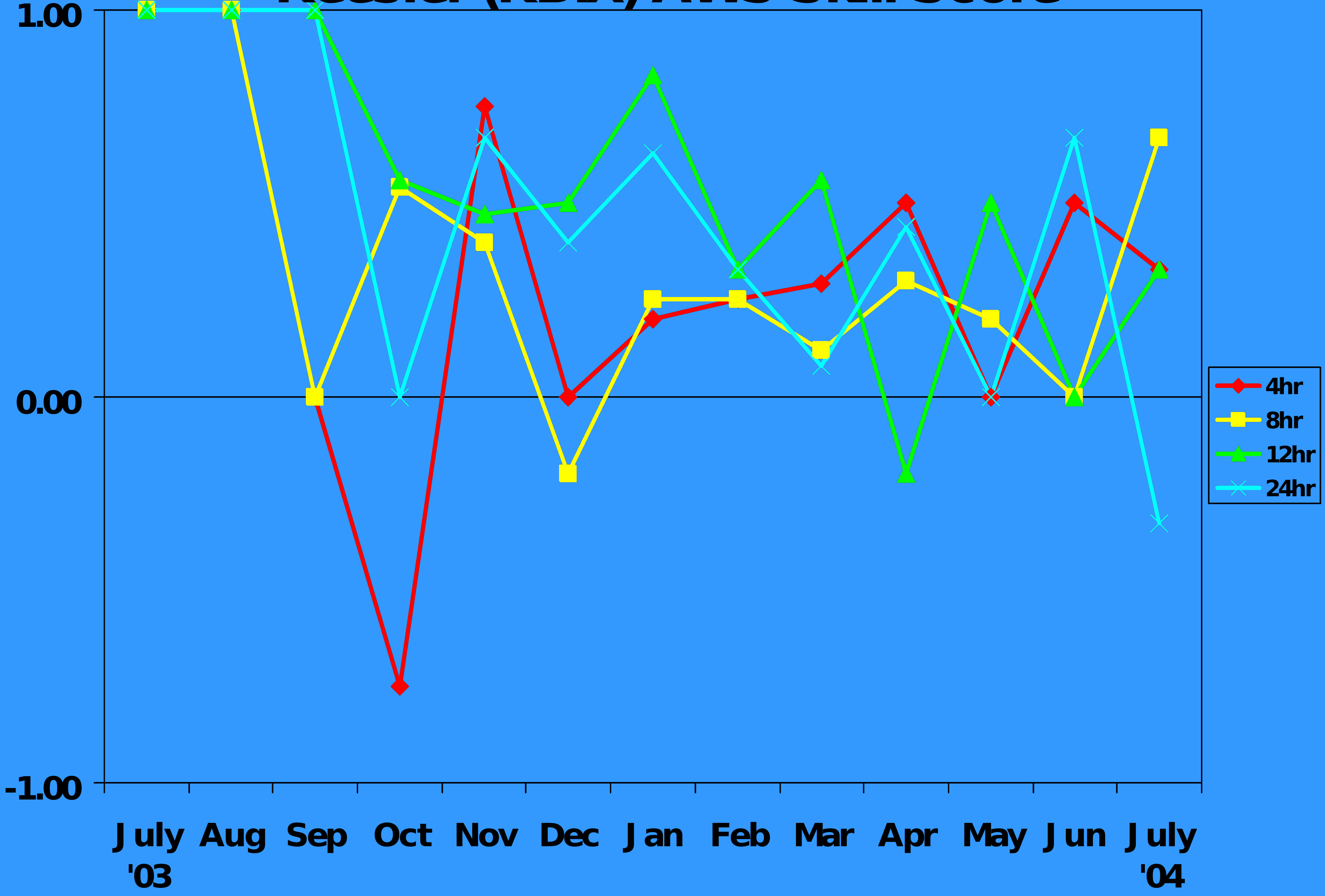
Little Rock (KLRF) AWS Skill Score



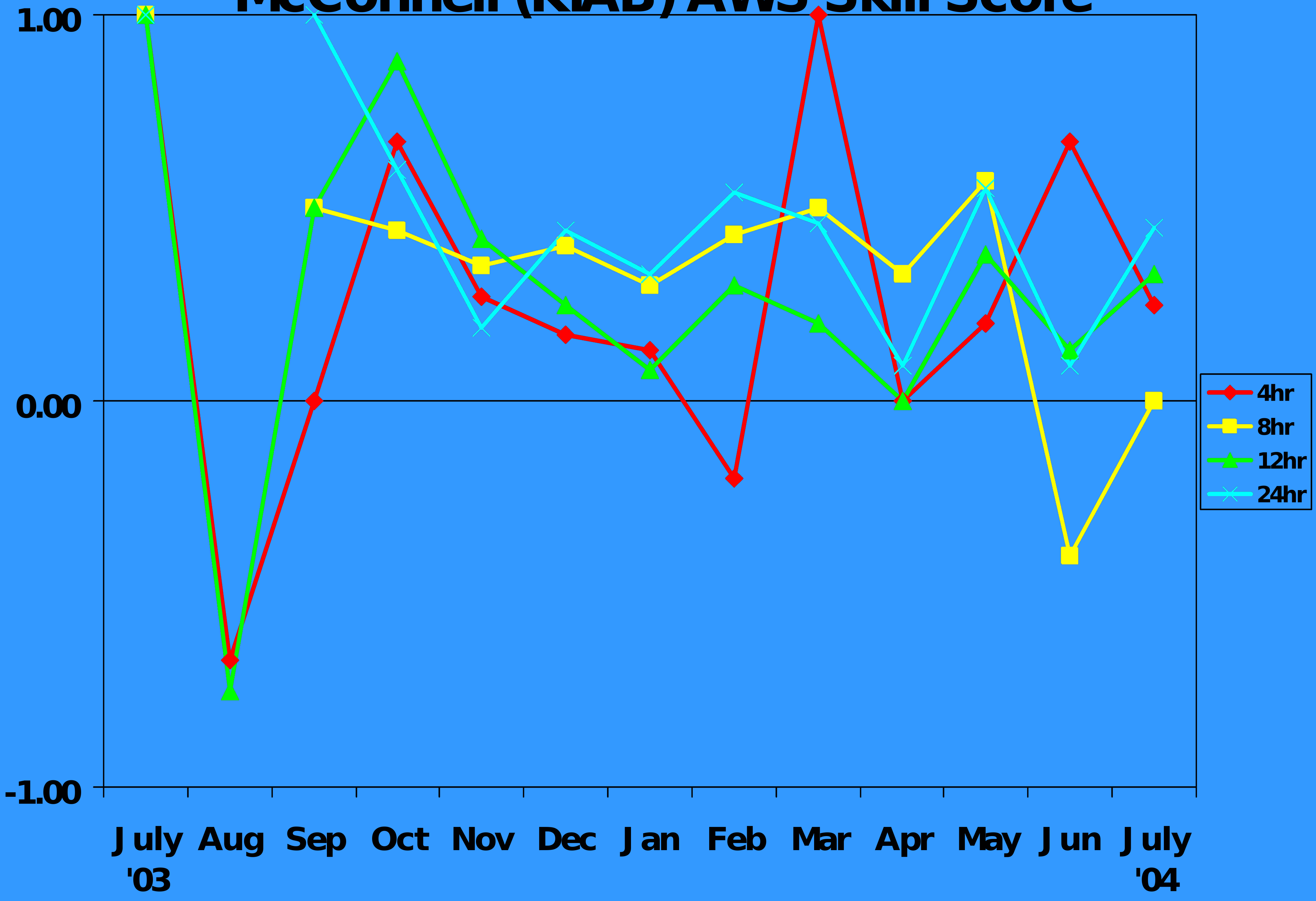
Columbus (KCBM) AWS Skill Score



Keesler (KBIX) AWS Skill Score

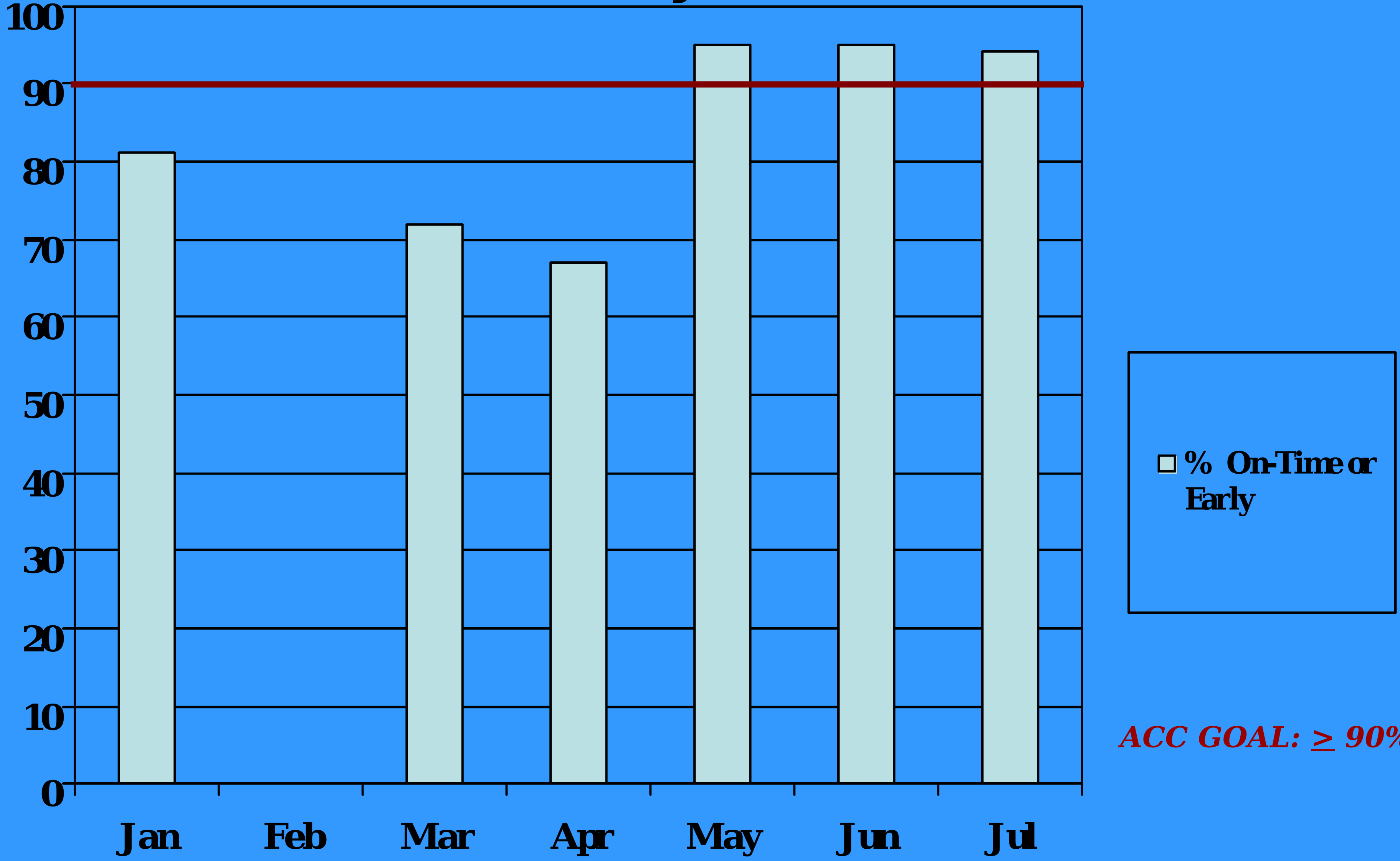


McConnell (KIAB) AWS Skill Score



Timeliness Graphs

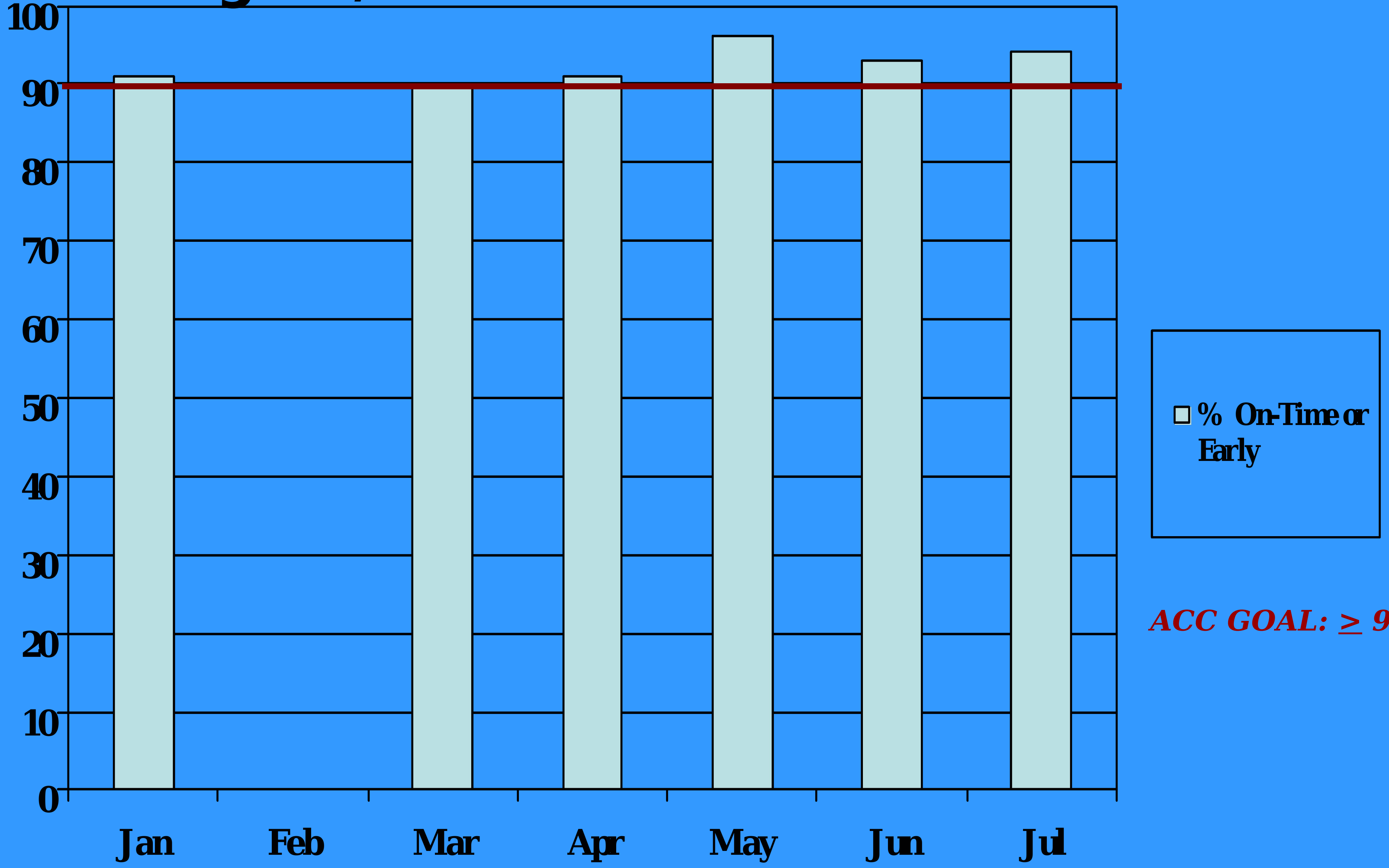
Forbes Flimsy Timeliness



ACC GOAL: ≥ 90%

Month	Jan	Feb	Mar	Apr	May	Jun	Jul
# Issued	16	N/A	18	21	21	21	22

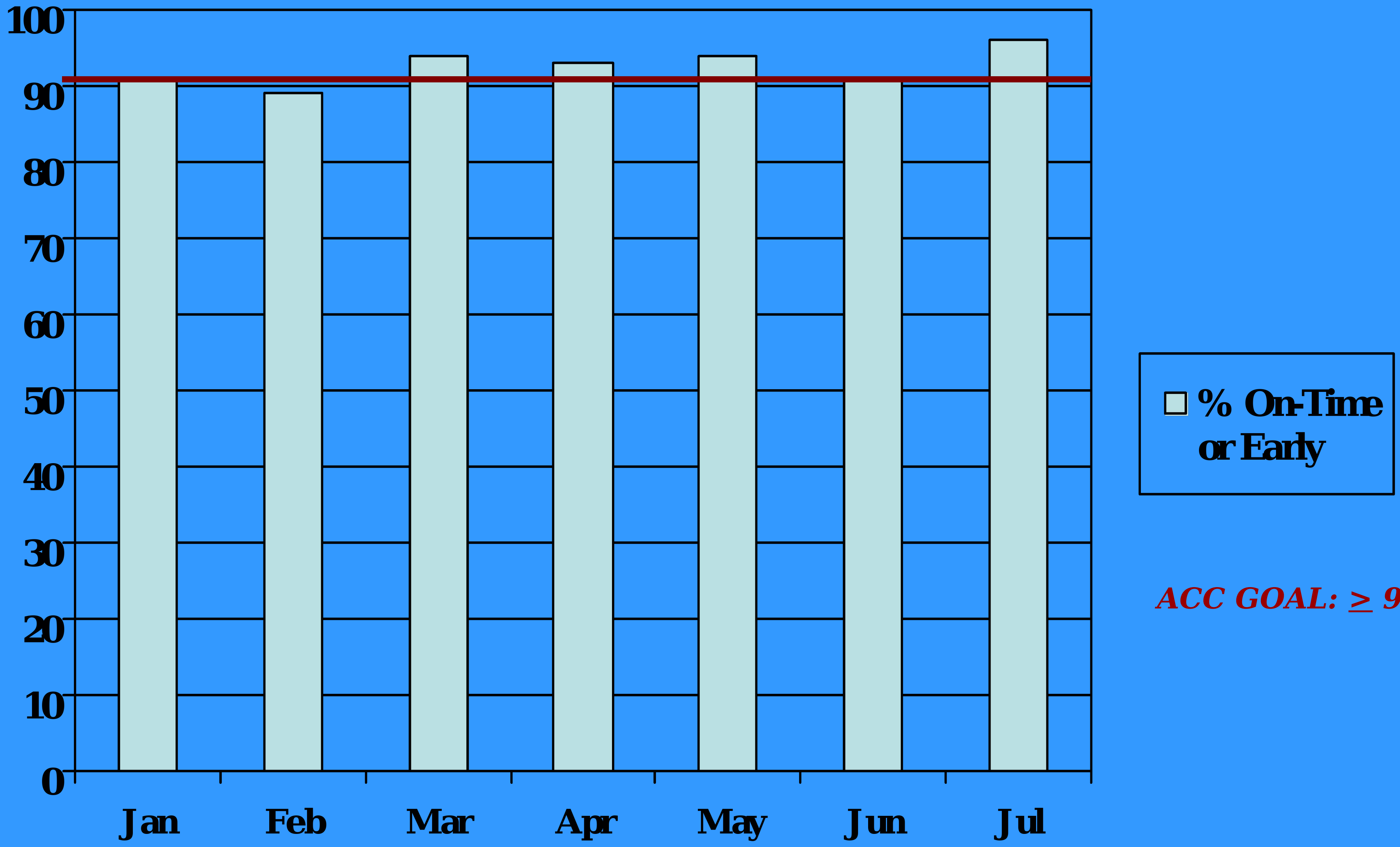
Region/Zone Bulletin Timeliness



ACC GOAL: ≥ 9

Month	Jan	Feb	Mar	Apr	May	Jun	Jul
# Issued	138	N/A	152	174	185	178	186

175-1 Timeliness



ACC GOAL: ≥ 9

Month	Jan	Feb	Mar	Apr	May	Jun	Jul
# Issued	669	680	684	701	639	669	688

July 2004 Graphics Verification

Measures Used

2 x 2 Contingency Table

Forecasts

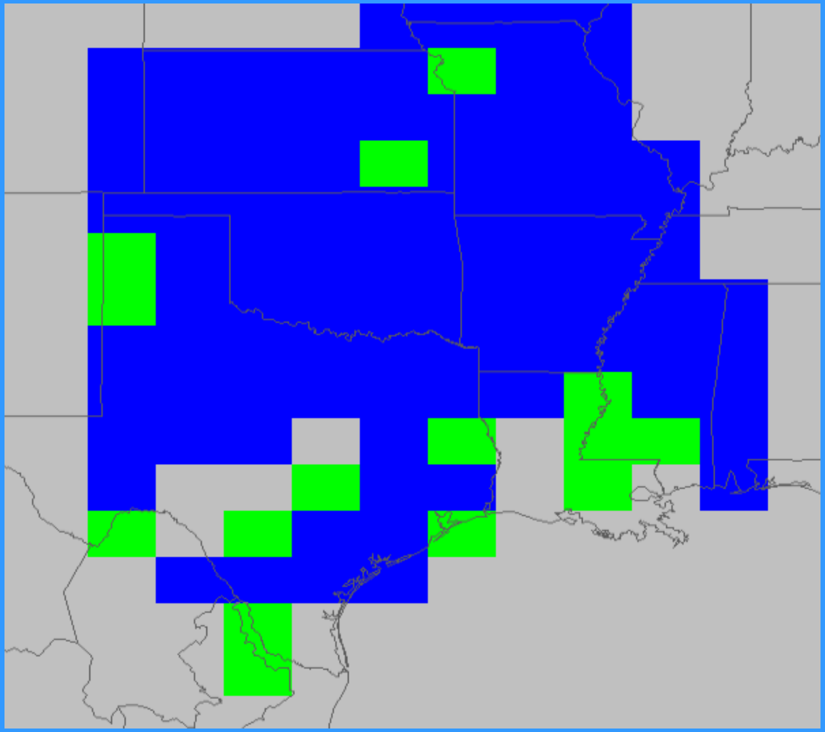
Observations	Yes	No	
Yes	A	B	**C = A +B**
No	D	E	**F = D + E**
	G = A + D	**H = B + E**	**I = C + F**

- **Chi-Square** – used to test for statistical significance. Answers the question, “Do we have a large enough sample to know our results are conclusive?”.
- **Heidke Skill Score (HSS)** – used to test whether we are beating persistence or climatology.
- **Bias** – used to determine whether we are over-forecasting or under-forecasting.

HWD Results

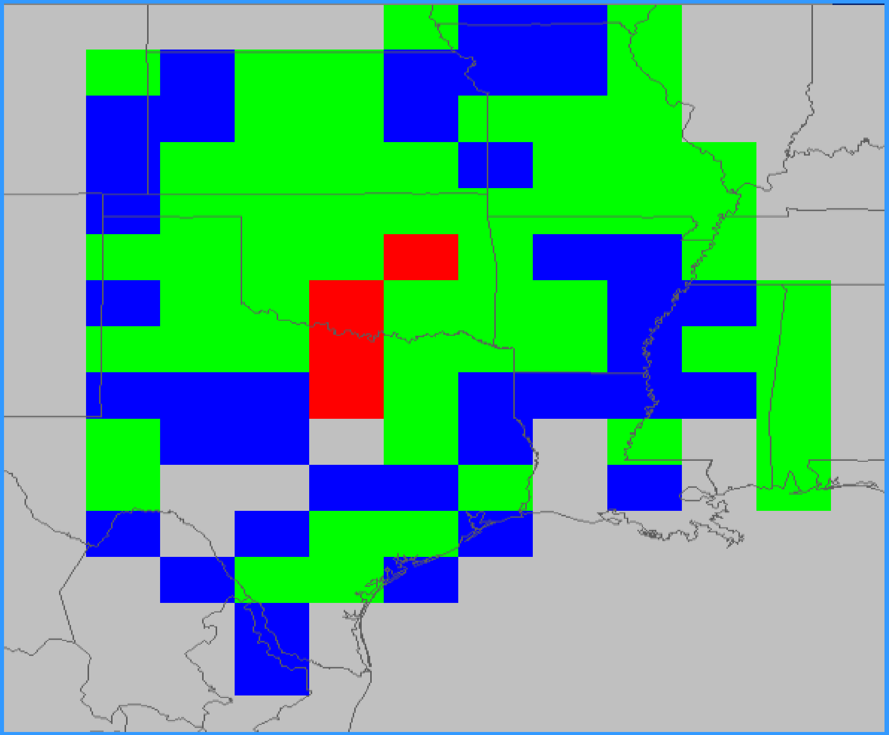
HWD 12 Hr Forecast

HEIDKE SKILL SCORE



- 🟦 Strong Skill (hss>.5)
- 🟩 Weak to Moderate Skill (0<hss<.5)
- 🟥 No Skill (hss< 0)
- ⬜ Insufficient Data

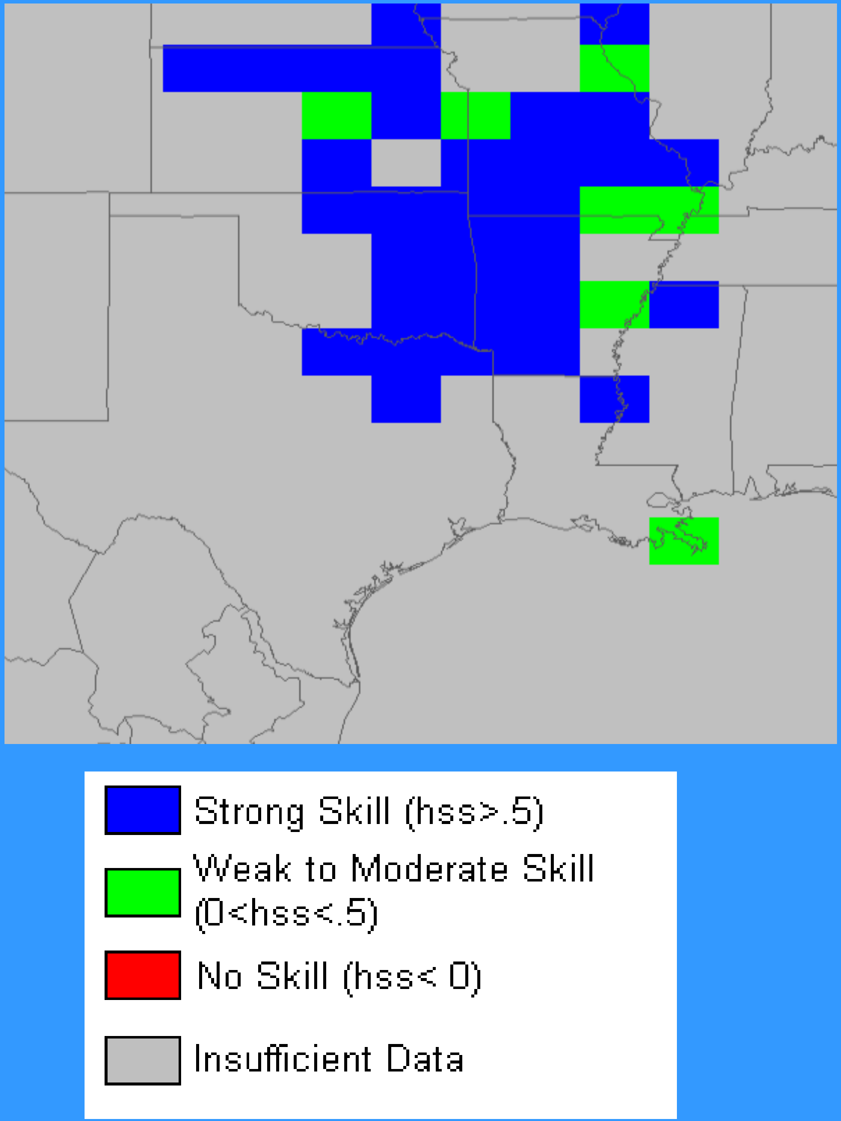
BIAS



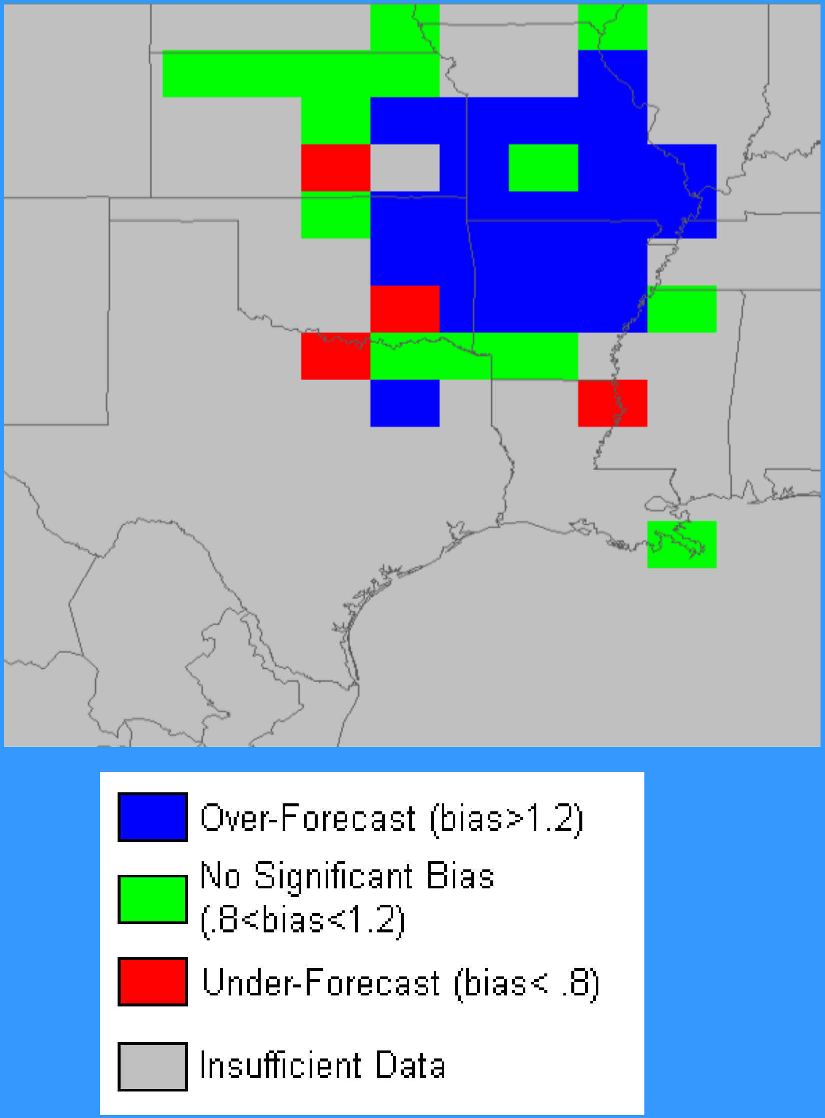
- 🟦 Over-Forecast (bias>1.2)
- 🟩 No Significant Bias (.8<bias<1.2)
- 🟥 Under-Forecast (bias< .8)
- ⬜ Insufficient Data

HWD 24 Hr Forecast

HEIDKE SKILL SCORE

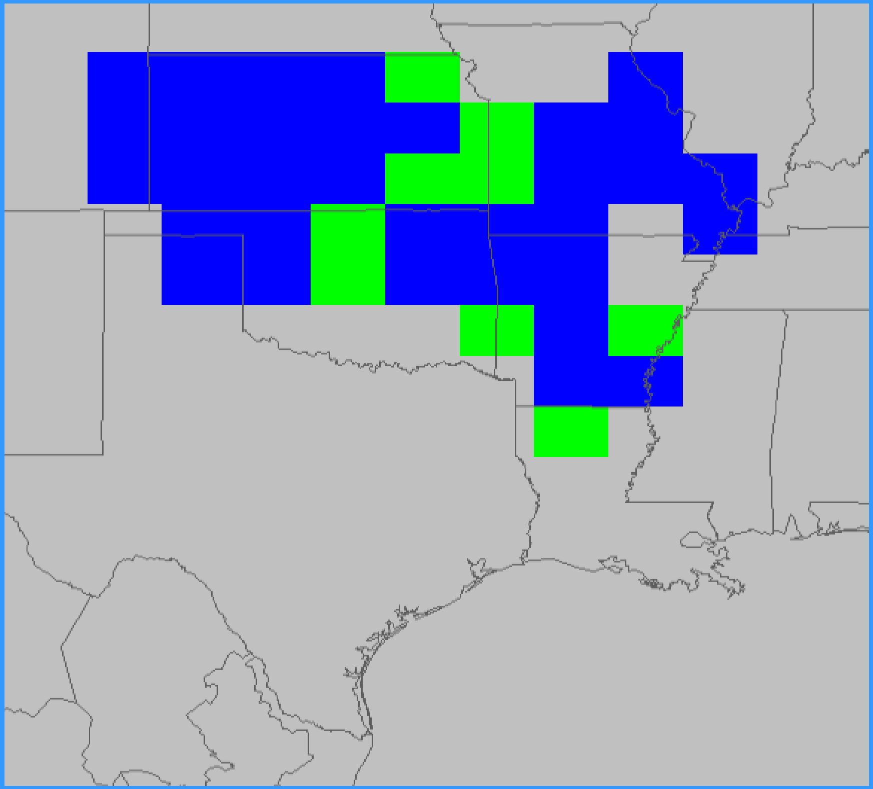

🟦 Strong Skill (hss>.5)
🟩 Weak to Moderate Skill (0<hss<.5)
🟥 No Skill (hss< 0)
⬜ Insufficient Data

BIAS


🟦 Over-Forecast (bias>1.2)
🟩 No Significant Bias (.8<bias<1.2)
🟥 Under-Forecast (bias< .8)
⬜ Insufficient Data

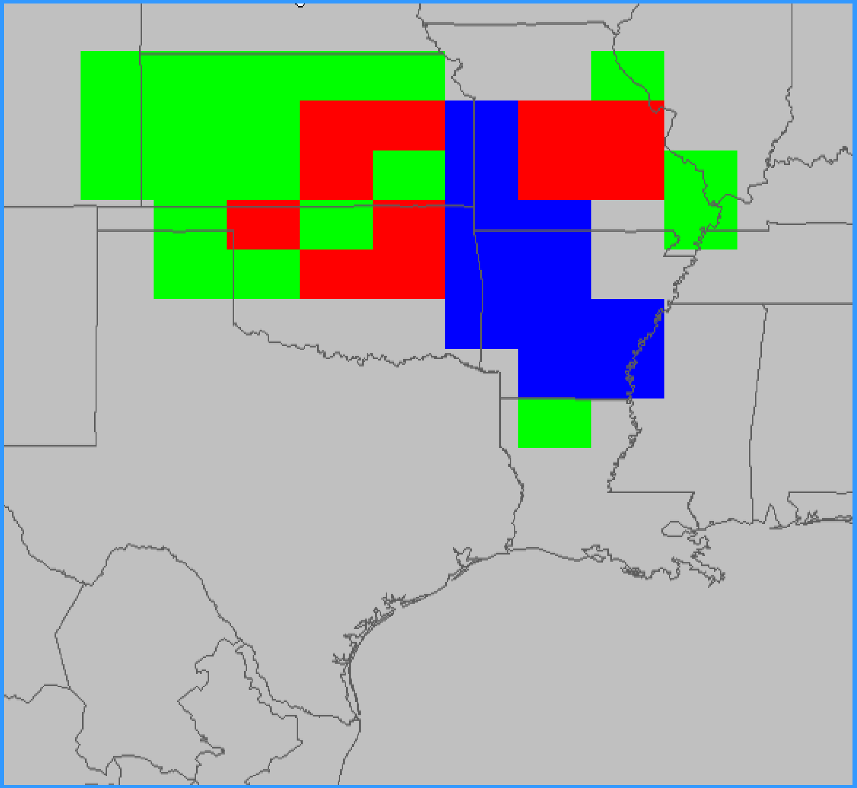
HWD 48 Hr Forecast

HEIDKE SKILL SCORE



- 🟦 Strong Skill (hss>.5)
- 🟩 Weak to Moderate Skill (0<hss<.5)
- 🟥 No Skill (hss< 0)
- ⬜ Insufficient Data

BIAS

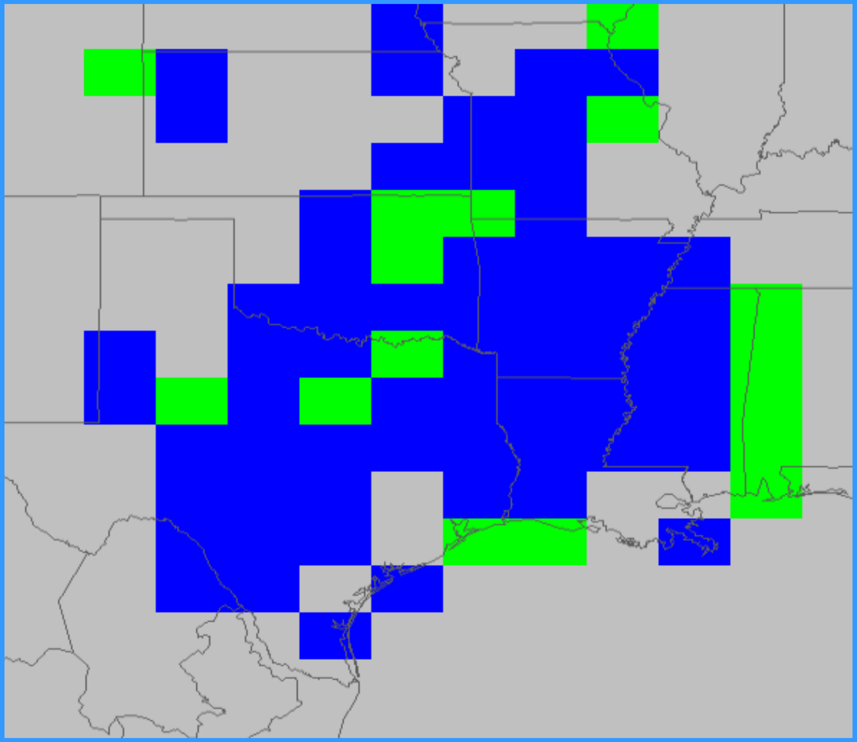


- 🟦 Over-Forecast (bias>1.2)
- 🟩 No Significant Bias (.8<bias<1.2)
- 🟥 Under-Forecast (bias< .8)
- ⬜ Insufficient Data

Thunderstorm Results

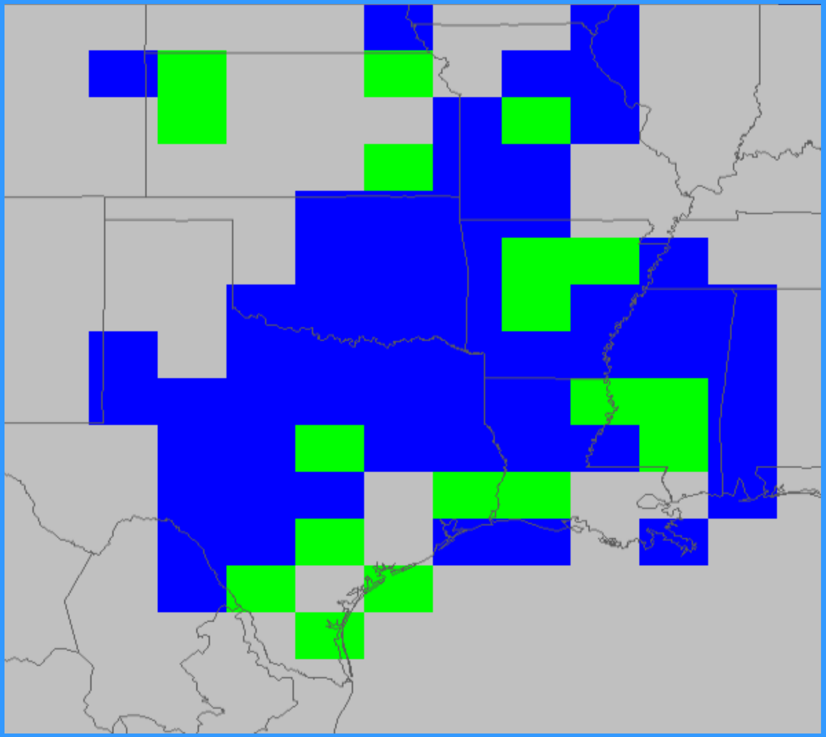
TSTMS 12 Hr Forecast

HEIDKE SKILL SCORE



- 🟦 Strong Skill (hss>.5)
- 🟩 Weak to Moderate Skill (0<hss<.5)
- 🟥 No Skill (hss< 0)
- ⬜ Insufficient Data

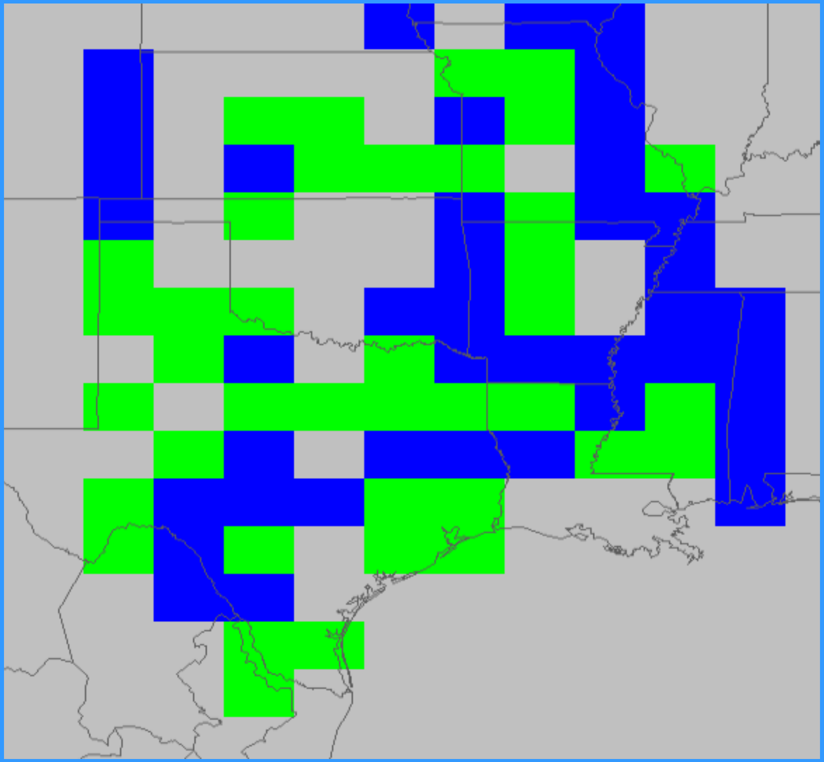
BIAS



- 🟦 Over-Forecast (bias>1.2)
- 🟩 No Significant Bias (.8<bias<1.2)
- 🟥 Under-Forecast (bias< .8)
- ⬜ Insufficient Data

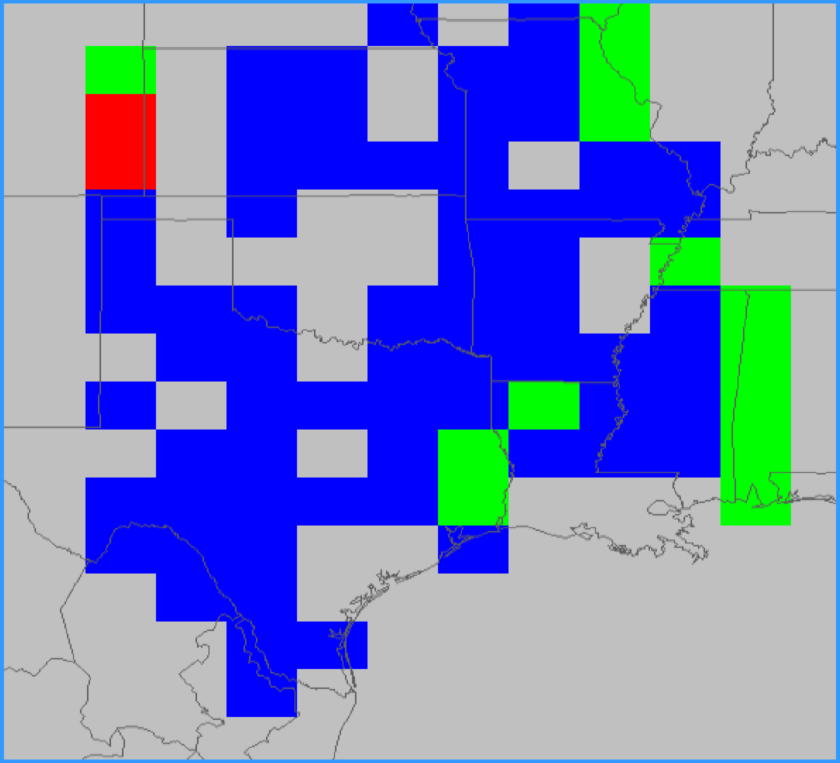
TSTMS 24 Hr Forecast

HEIDKE SKILL SCORE



- 🟦 Strong Skill (hss>.5)
- 🟩 Weak to Moderate Skill (0<hss<.5)
- 🟥 No Skill (hss< 0)
- ⬜ Insufficient Data

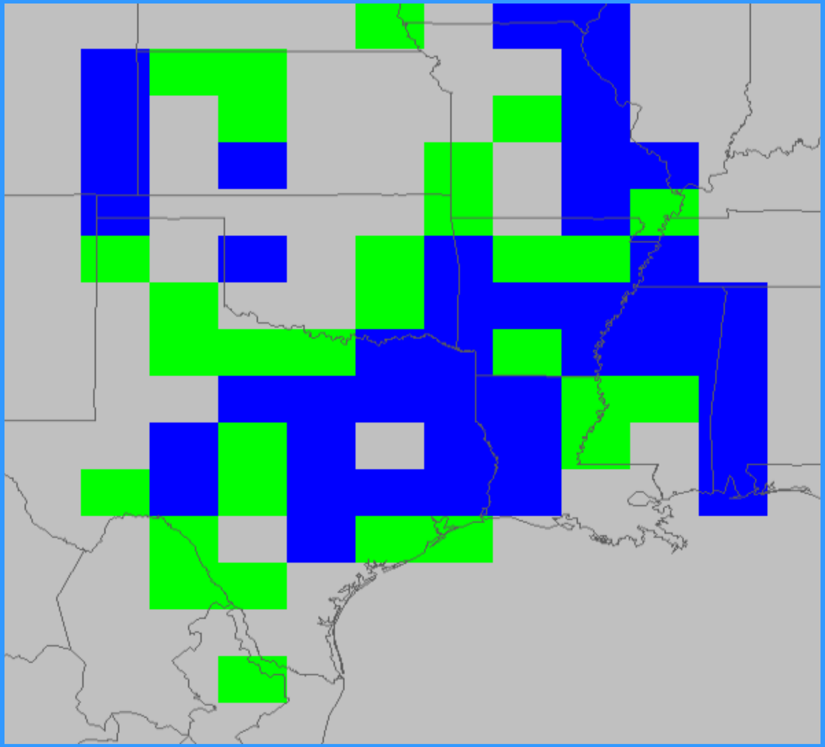
BIAS



- 🟦 Over-Forecast (bias>1.2)
- 🟩 No Significant Bias (.8<bias<1.2)
- 🟥 Under-Forecast (bias< .8)
- ⬜ Insufficient Data

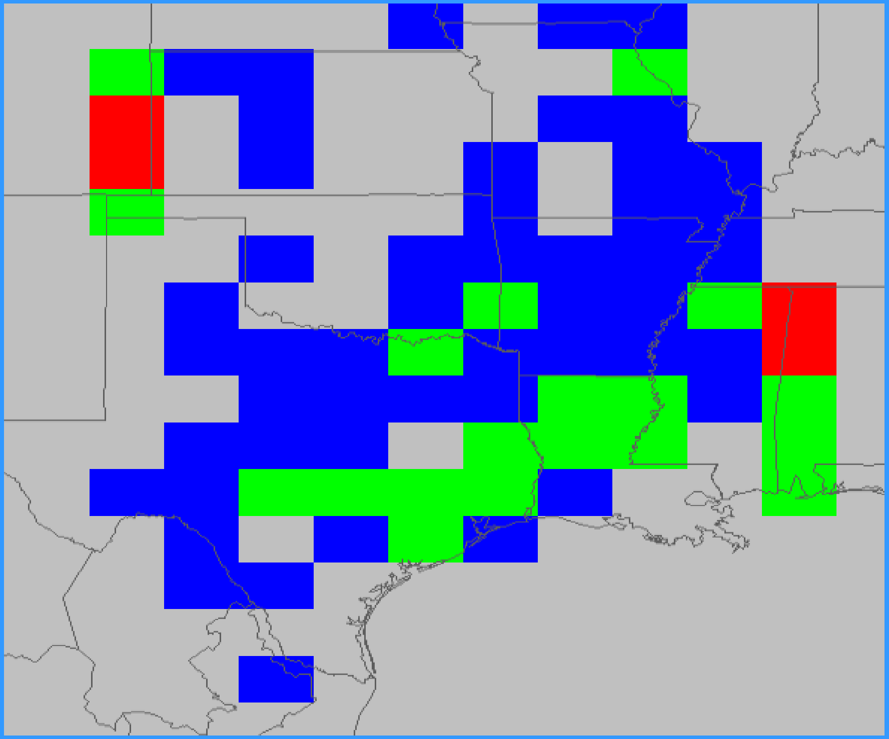
TSTMS 48 Hr Forecast

HEIDKE SKILL SCORE



- 🟦 Strong Skill (hss>.5)
- 🟩 Weak to Moderate Skill (0<hss<.5)
- 🟥 No Skill (hss< 0)
- ⬜ Insufficient Data

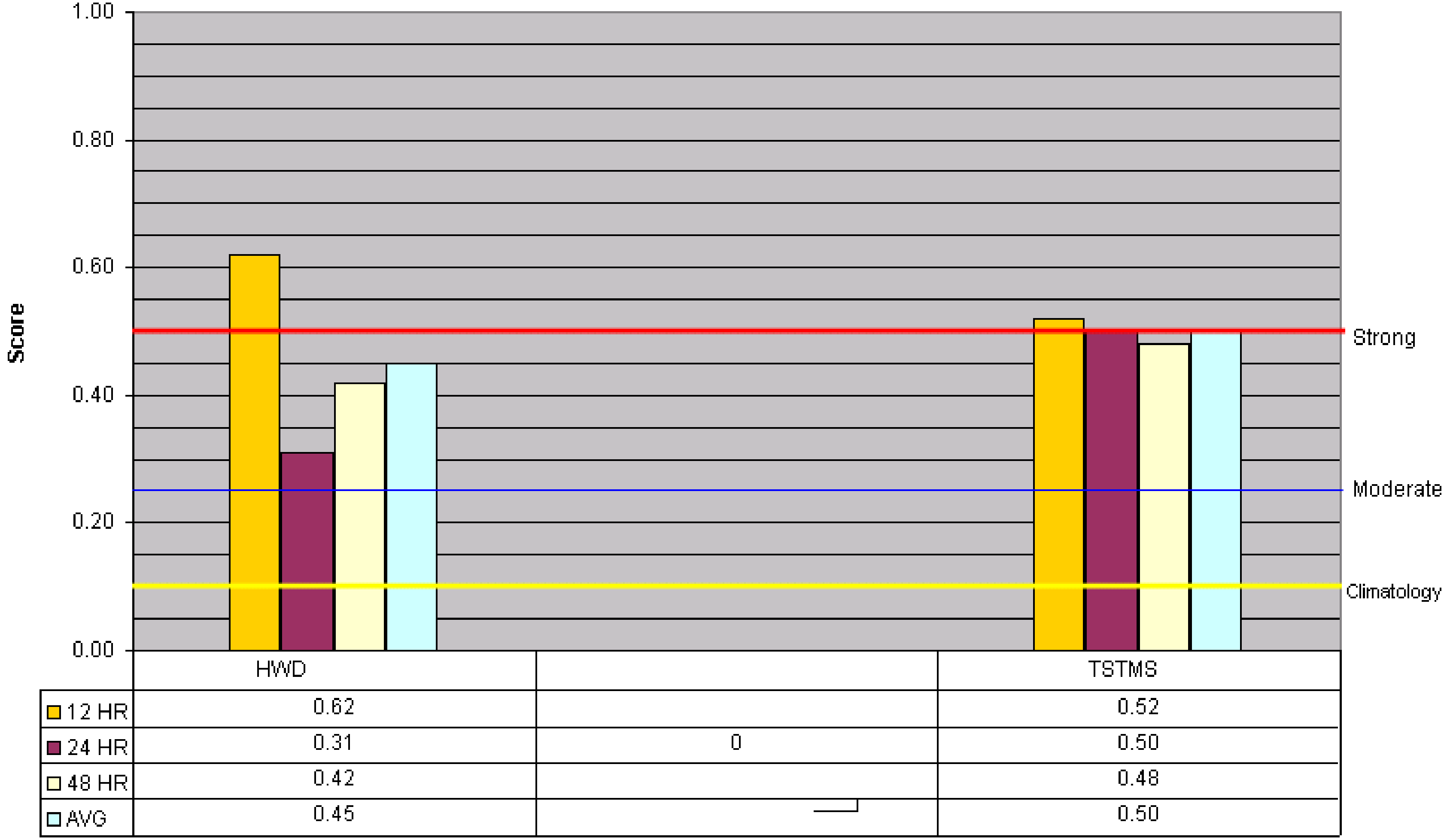
BIAS



- 🟦 Over-Forecast (bias>1.2)
- 🟩 No Significant Bias (.8<bias<1.2)
- 🟥 Under-Forecast (bias< .8)
- ⬜ Insufficient Data

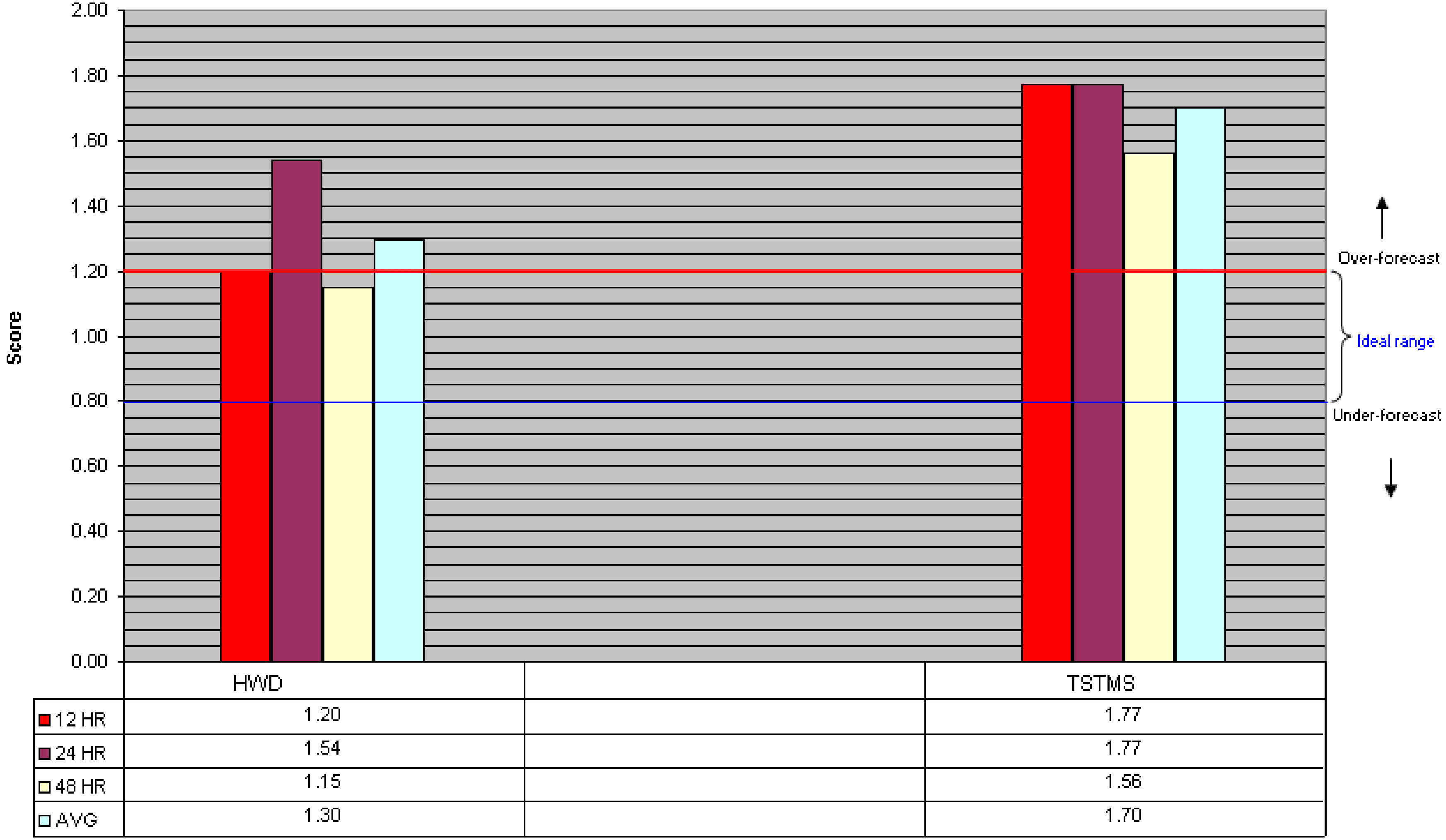
Numerical Output

Jul 04 HSS



	HWD		TSTMS
🟨 12 HR	0.62		0.52
🟥 24 HR	0.31	0	0.50
☐ 48 HR	0.42		0.48
☐ AVG	0.45		0.50

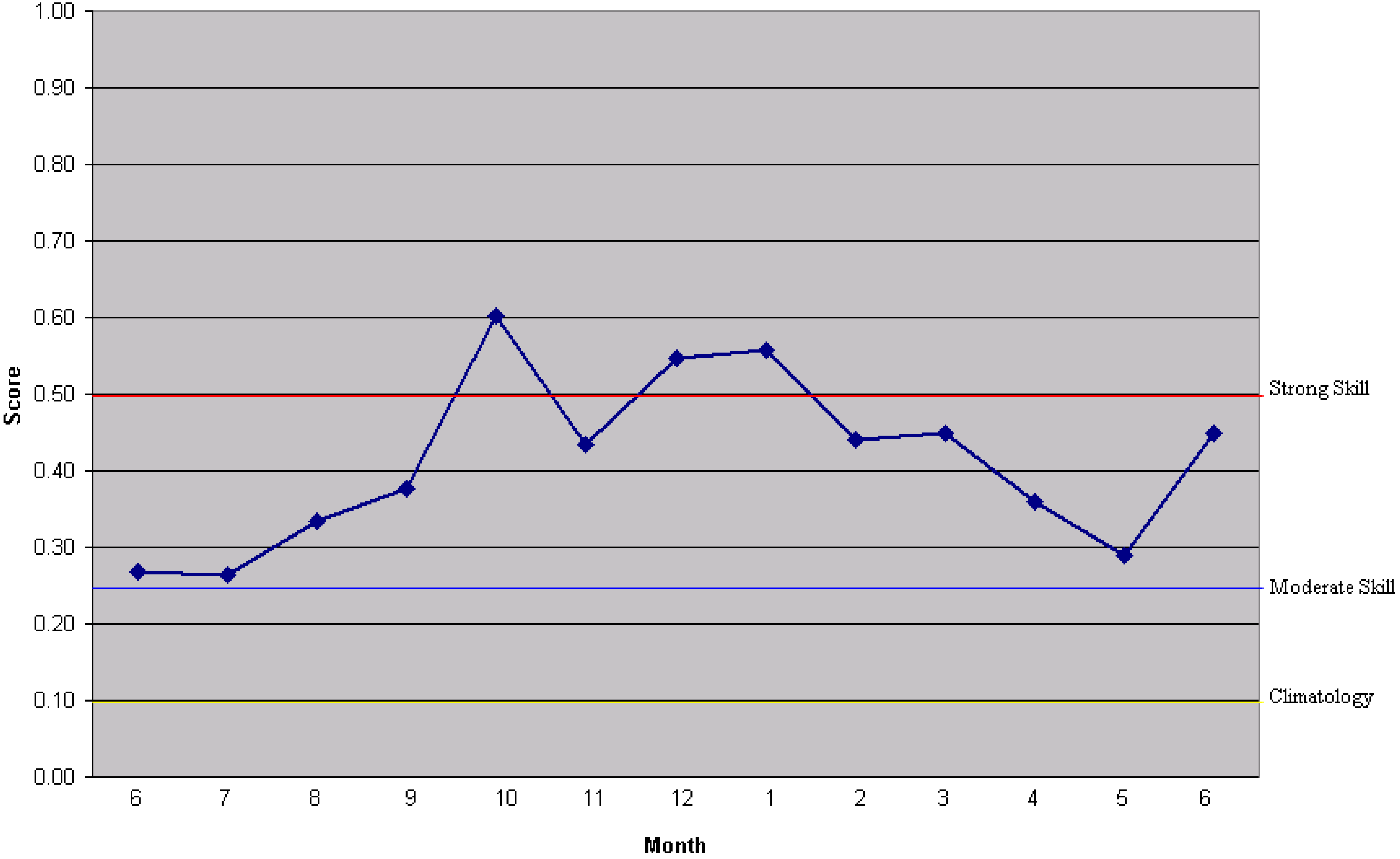
Jul 04 BIAS



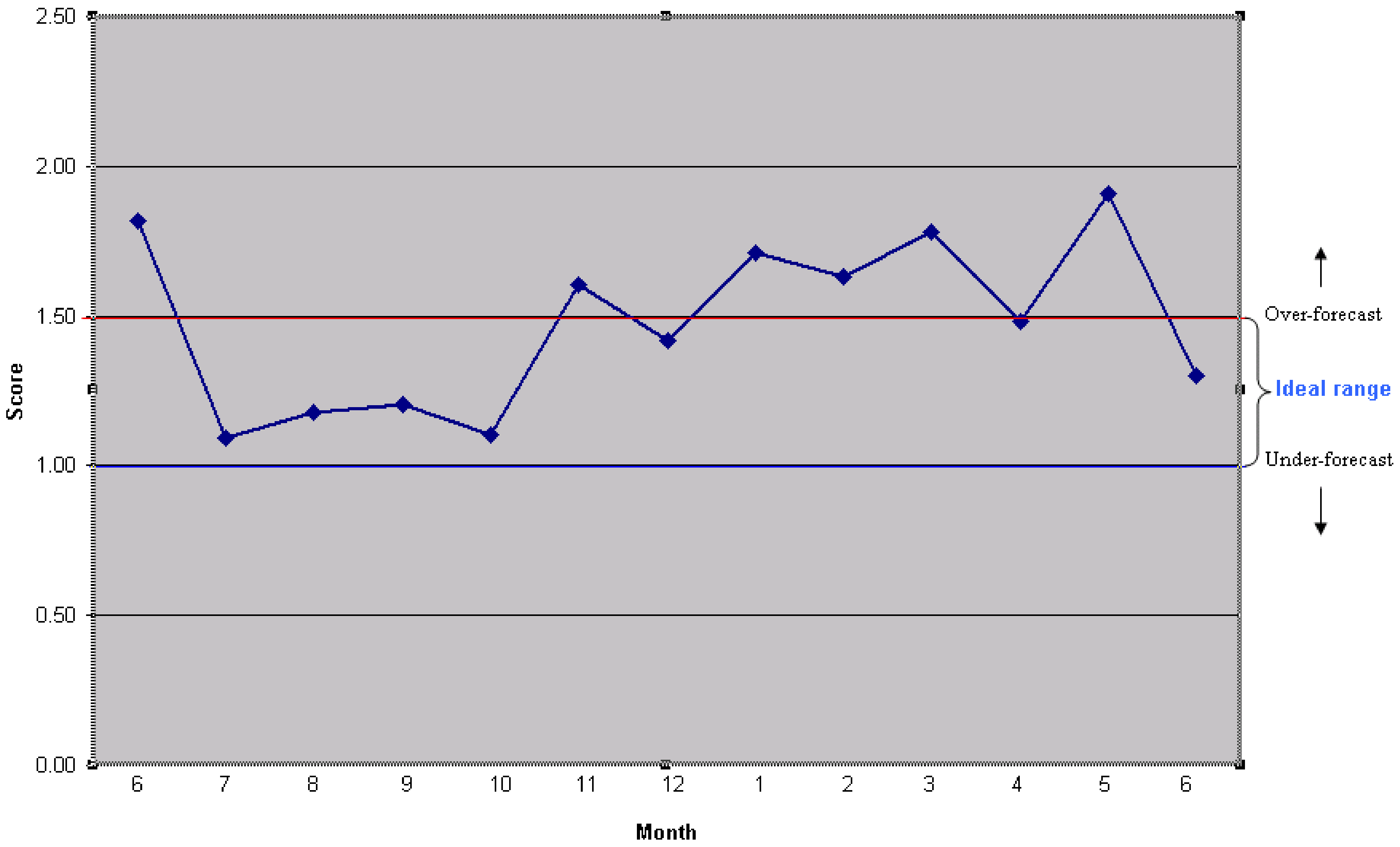
	HWD		TSTMS
🟥 12 HR	1.20		1.77
🟪 24 HR	1.54		1.77
🟨 48 HR	1.15		1.56
🟦 AVG	1.30		1.70

Graphics Trends

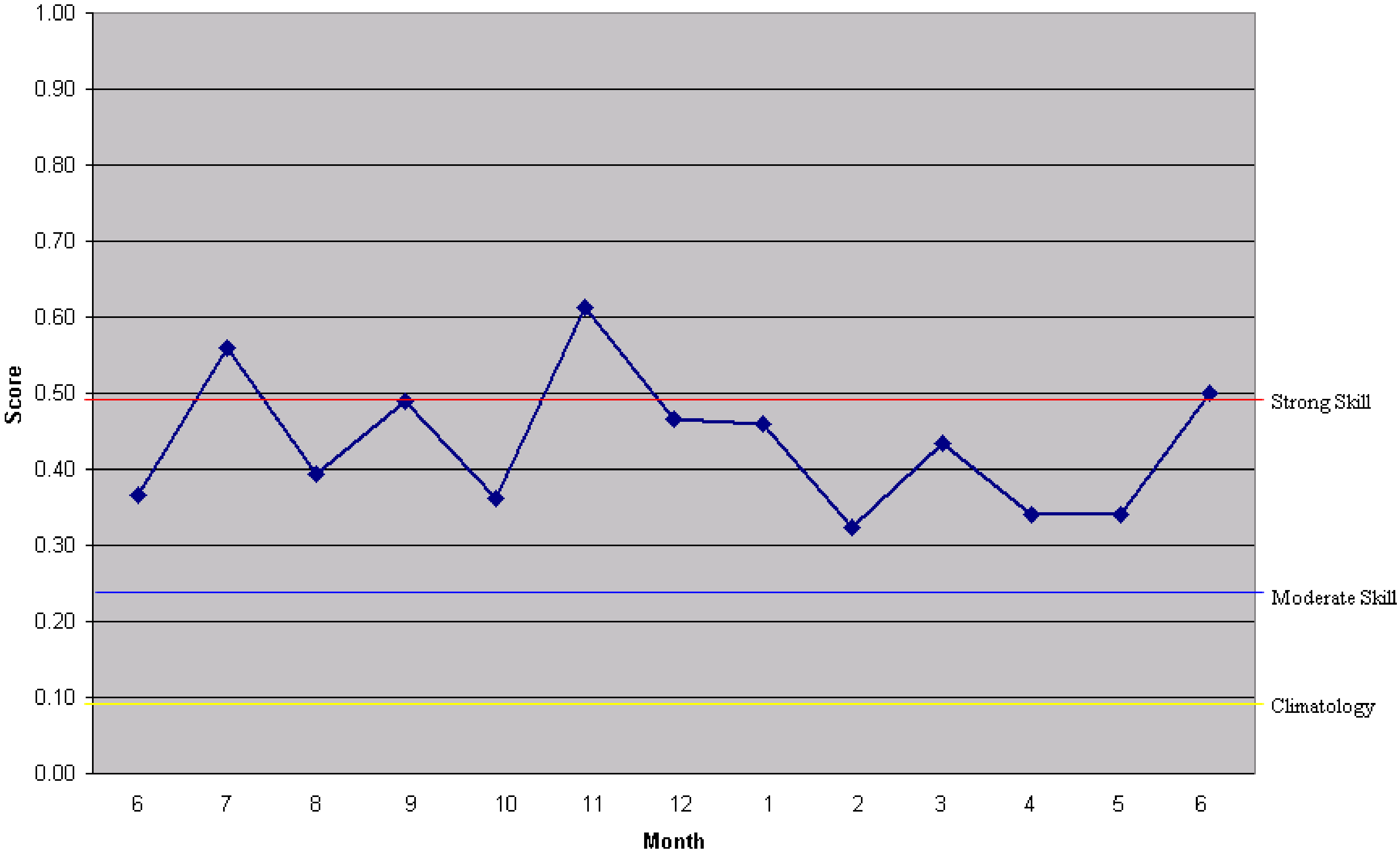
HSS HWD ALL HOURS



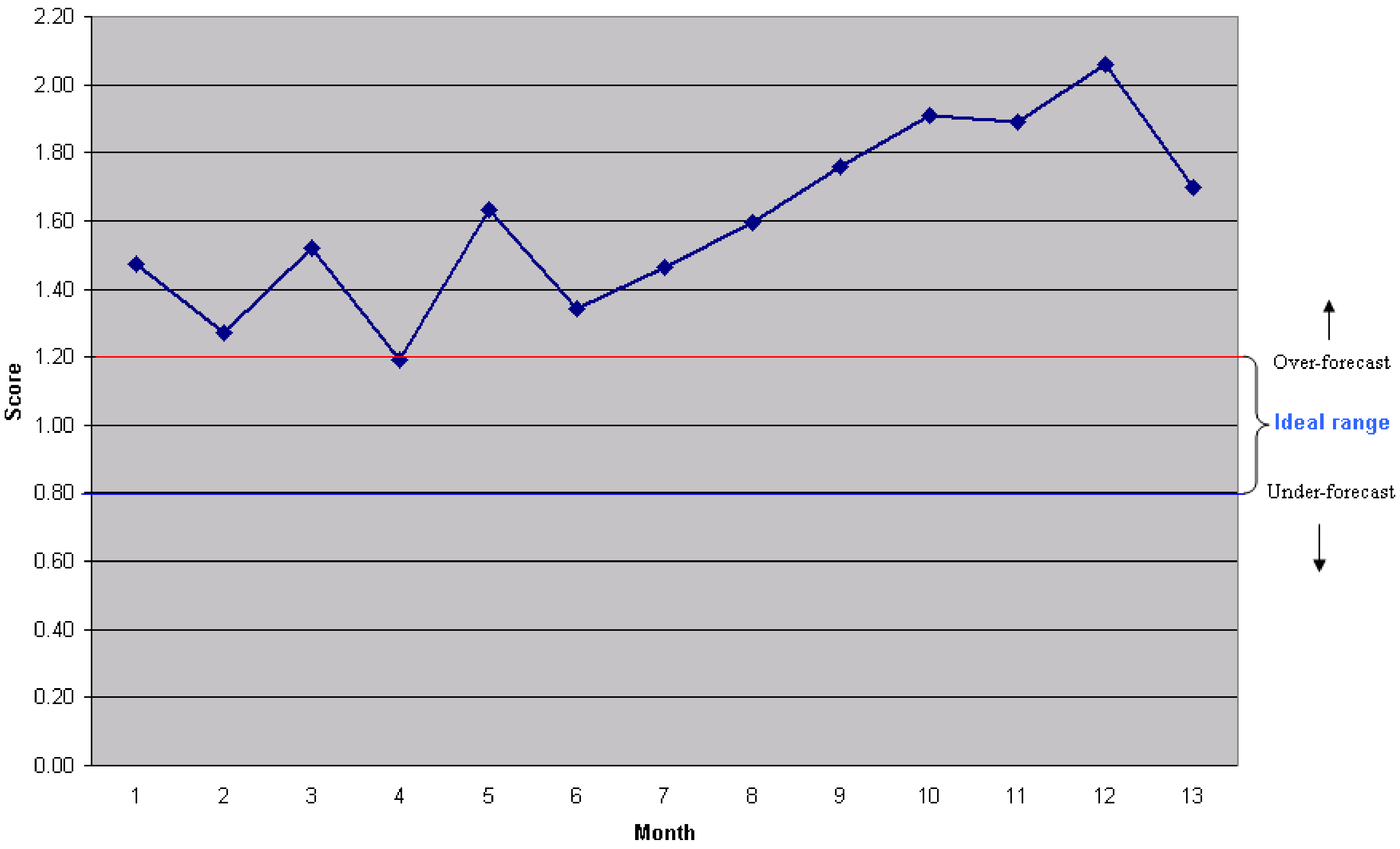
BIAS HWD ALL HOURS



HSS TSTM ALL HOURS



BIAS TSTM ALL HOURS



Review

- HWD – Showed strong skill in HWD forecasting. Improved over June 04 and July 03 results. Fell into ideal range for forecast bias—also an improvement from last month.

- TSTMS – Showed strong skill in TSTM forecasting. Still over forecasting, but improved from last month and reversed over forecasting trend.

Pireps Verification

Measures Used

- **POD – Used to determine proportion of Yes and No PIREPS properly forecasted**

- **PODy – Probability of the accurate detection of a “Yes” PIREP**

- **PODn – Probability of the proper detection of a “No” PIREP**

- **True Skill Statistic (TSS) – Used to show the ability of the forecast to discriminate between “yes” and “no” observations.**

- **Percentage Correct (PC) – The percentage of accurate forecasts**

Measures Used

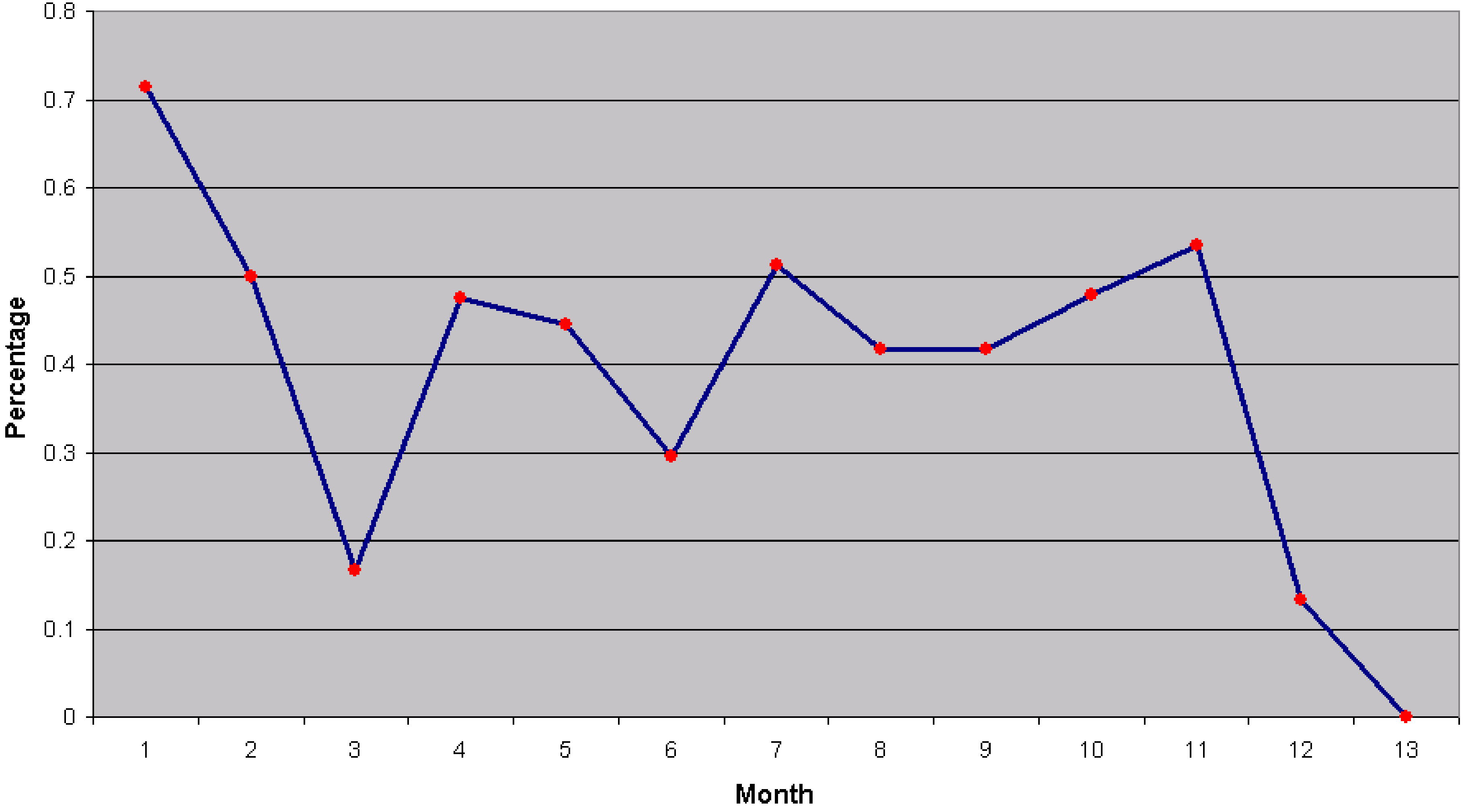
2 x 2 Contingency Table

		Forecasts		Total
		Yes	No	
Observations	Yes	hits	misses	Observed yes
	No	False alarms (FA)	Correct negatives (CN)	Observed no
		Forecast Yes	Forecast No	Total

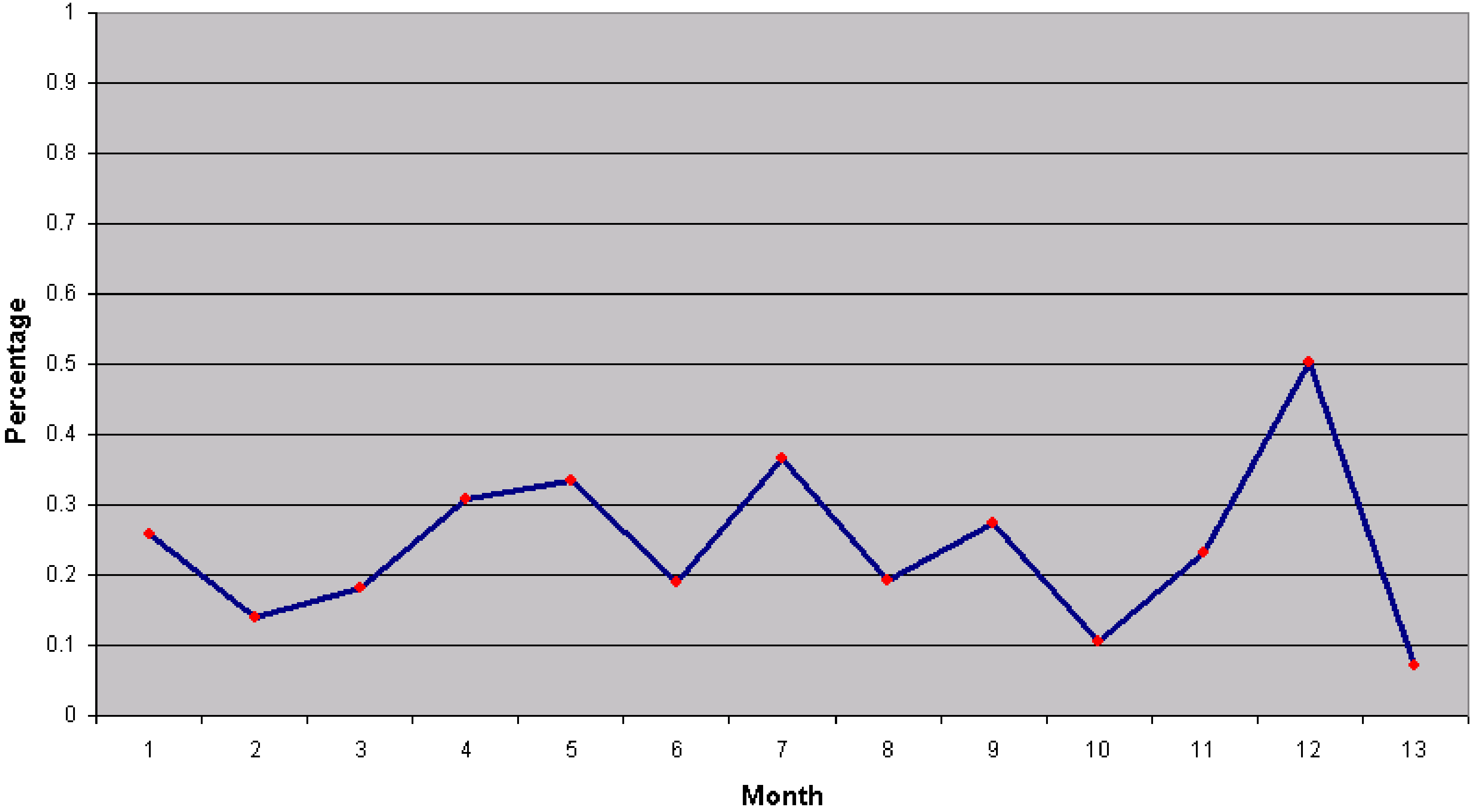
- PODy – $\frac{\text{Hits}}{\text{(observed yes)}}$
- PODn – $\frac{\text{correct negative}}{\text{(observed no)}}$
- True Skill Statistic (TSS) - *PODy* + *PODn* – 1(a value above 0.25 indicates forecasts are better than persistence)
- Percentage Correct - $\frac{\text{(hits + CN)}}{\text{Total}}$

2004 Trends

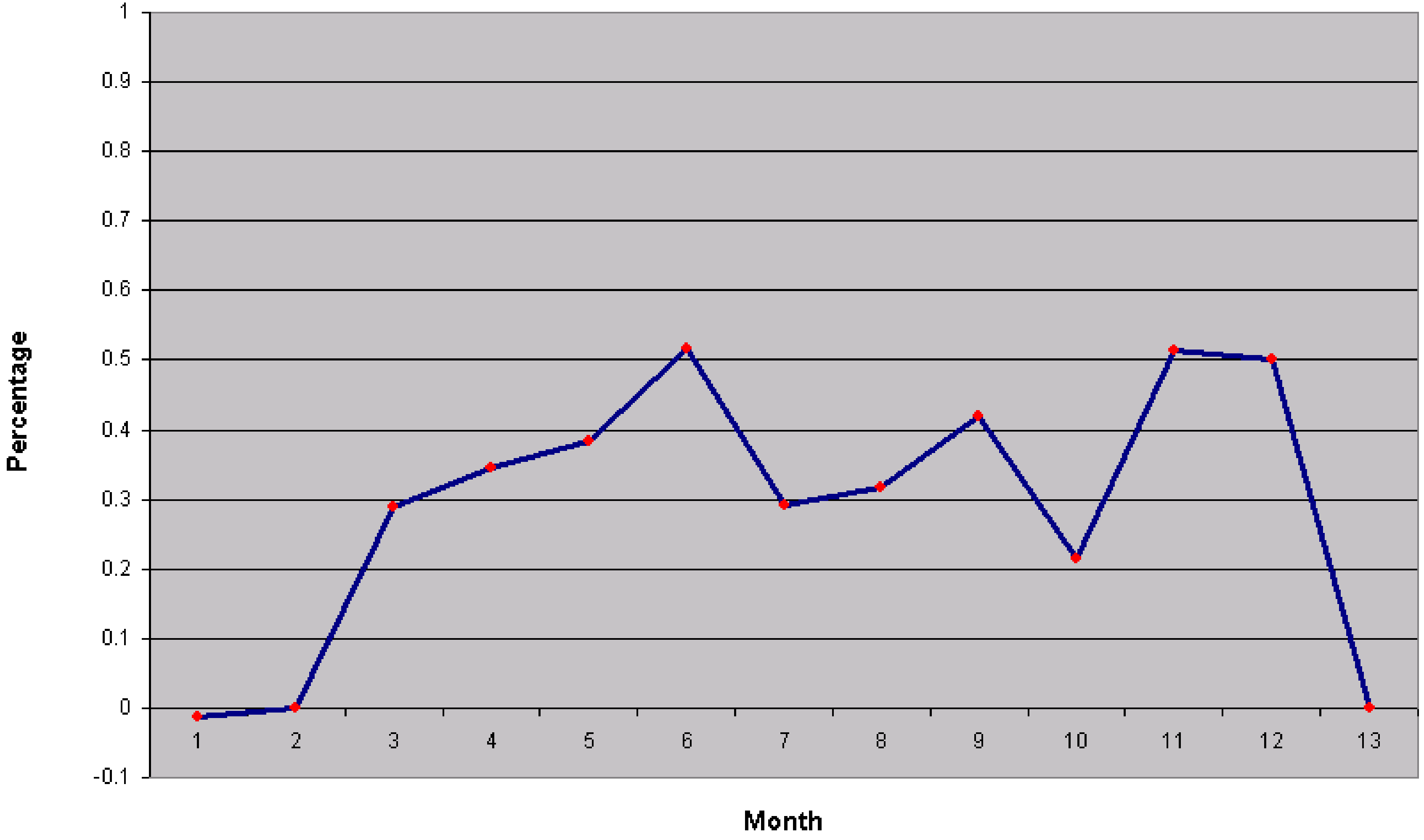
Icing Trends
True Skill Statistic (TSS)



Low Level Turbulence Trends
True Skill Statistics (TSS)



Upper Level Turbulence Trends
True Skill Statistics (TSS)



Review

- **Icing – Trends not representative of actual skill level of forecasters. Only 26 total pireps for entire month + error in metrics collection led to a zero skill level result. The majority of icing reports were most likely related to Tstms, but were not recorded as so.**

- **UL Turbulence – Only 6 total UL Turbc pireps for the month of July were recorded, and none were forecasted. This resulted in a very significant skill drop despite the limited amount of data available.**

- **LL Turb - Drop in skill most likely due to under forecasting areas of light turbulence. The majority of pireps were light turbulence, and we rarely forecasted any in our AOR. 82 positive pireps were not forecasted on any charts. However, 162 negative pireps verified our NIL areas.**